

Veles Water Weekly Report

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April 25th 2024

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WATER FUTURES MARKET ANALYSIS

Welcome to ***WATERTALK***

by Joshua Bell

CLICK THE LINK BELOW

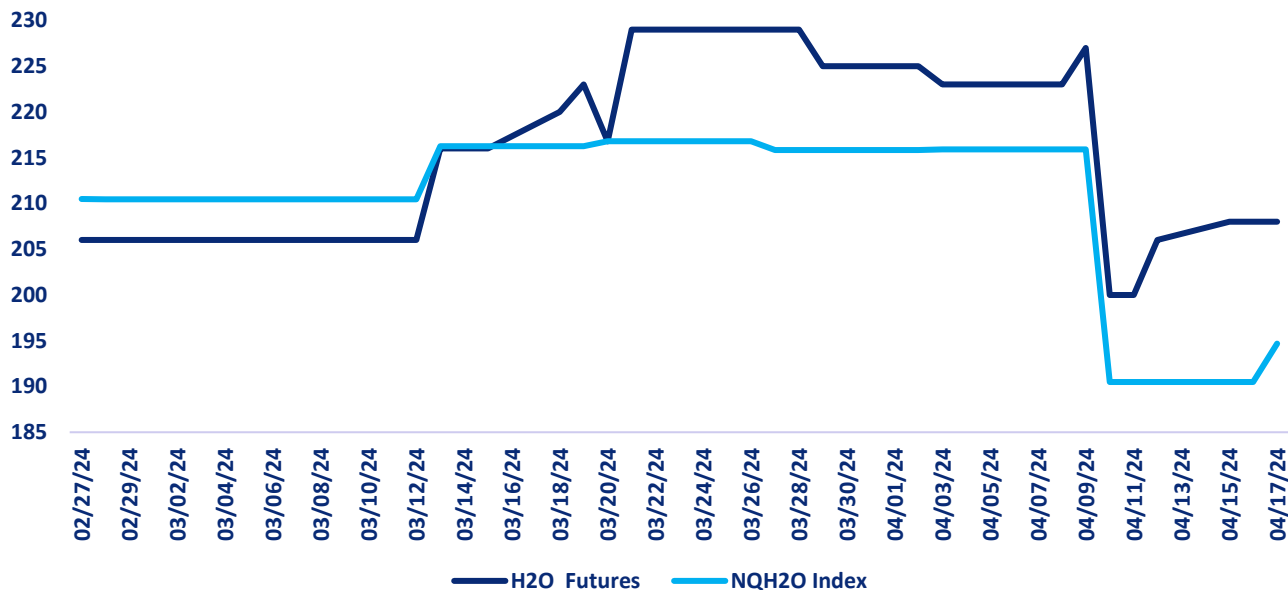
"A 2 minute technical analysis video of H2O futures"

<https://vimeo.com/938811427?share=copy>



NQH2O INDEX PRICE vs H2O FUTURES PRICE

1 Month Price Performance NQH2O Index vs H2O Futures



Price Chart Based upon Daily Close

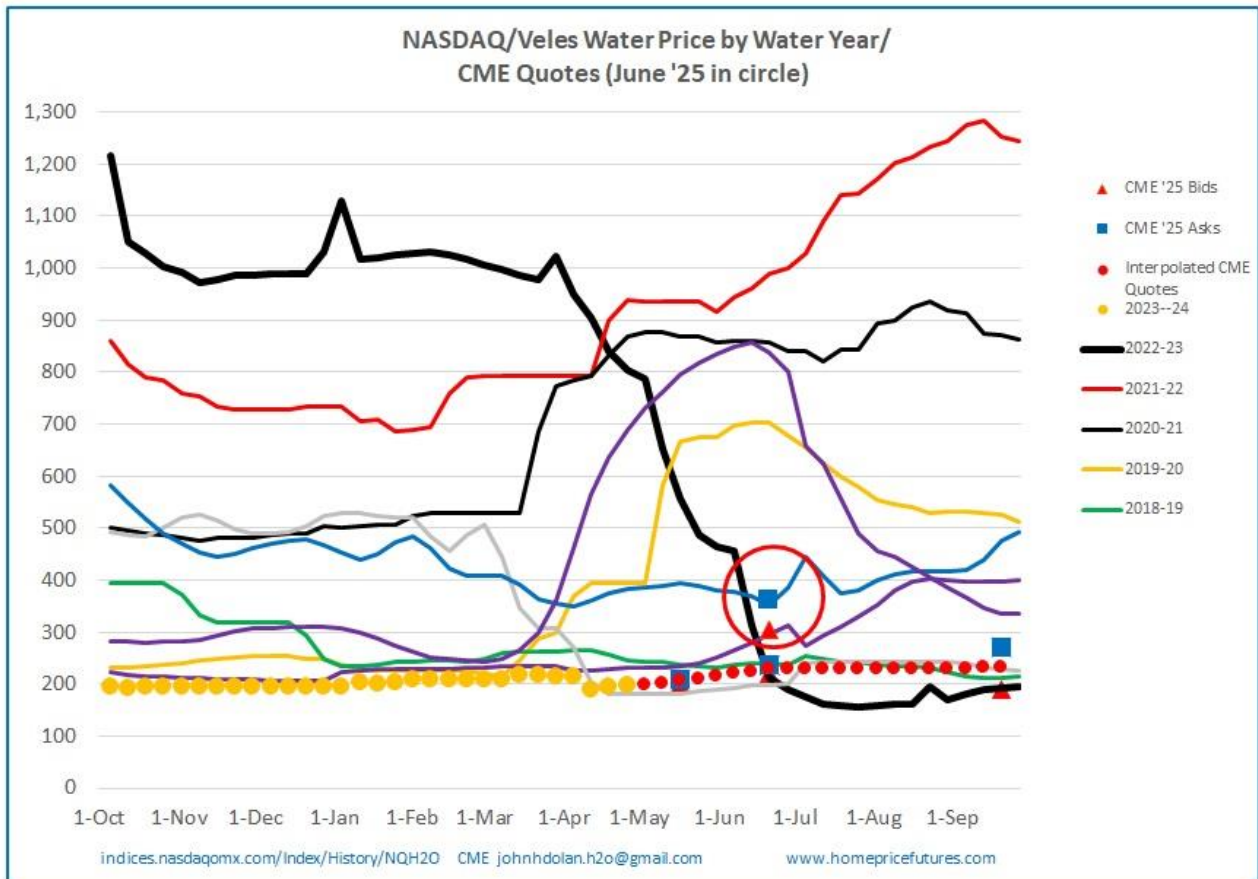
The new NQH2O index level of \$196.79 was published on April 24th up \$2.09 or 1.07% from the previous week. The May is considered the front month. The futures have been closing at a premium of \$11.21 to \$13.30 versus the index over the past week.

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

May 24	201@209
Jun 24	220@237
Sept 24	190@271
Dec 24	180@266
Jun 25	304@365



NQH20 INDEX HISTORY



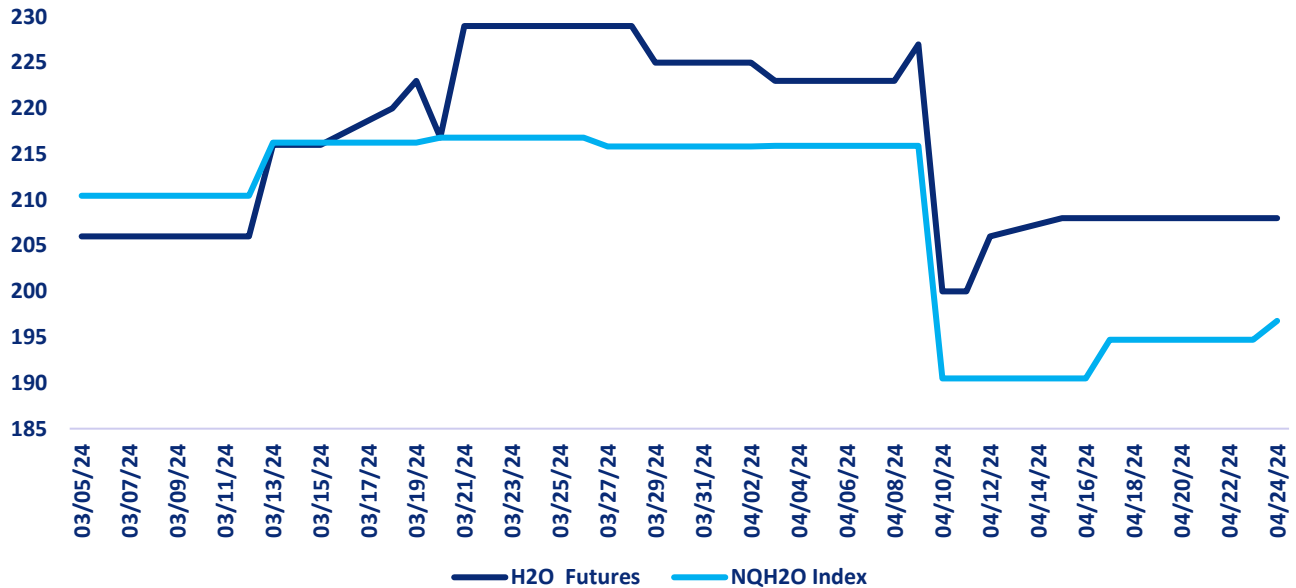
The graph above shows the CME water contracts for April, May and June 2024 (and June 2025) superimposed over historical NASDAQ Veles water indices. A red dotted line has been added to interpolate between the April-June contracts for the 2023-2024 water year.

(John H Dolan, CME Market Maker)



H2O FUTURES AND NQH2O INDEX VOLATILITY ANALYSIS

1 Month Price Performance NQH2O Index vs H2O Futures



DAILY VOLATILITY

Over the last week the April contract daily future volatility has been 0%

ASSET	1 YEAR (%)	2 MONTH (%)	1 MONTH (%)	1 WEEK (%)
NQH2O INDEX	54.51%	11.51%	15.54%	1.14%
H2O FUTURES	N/A	15.25%	12.76%	0.00%

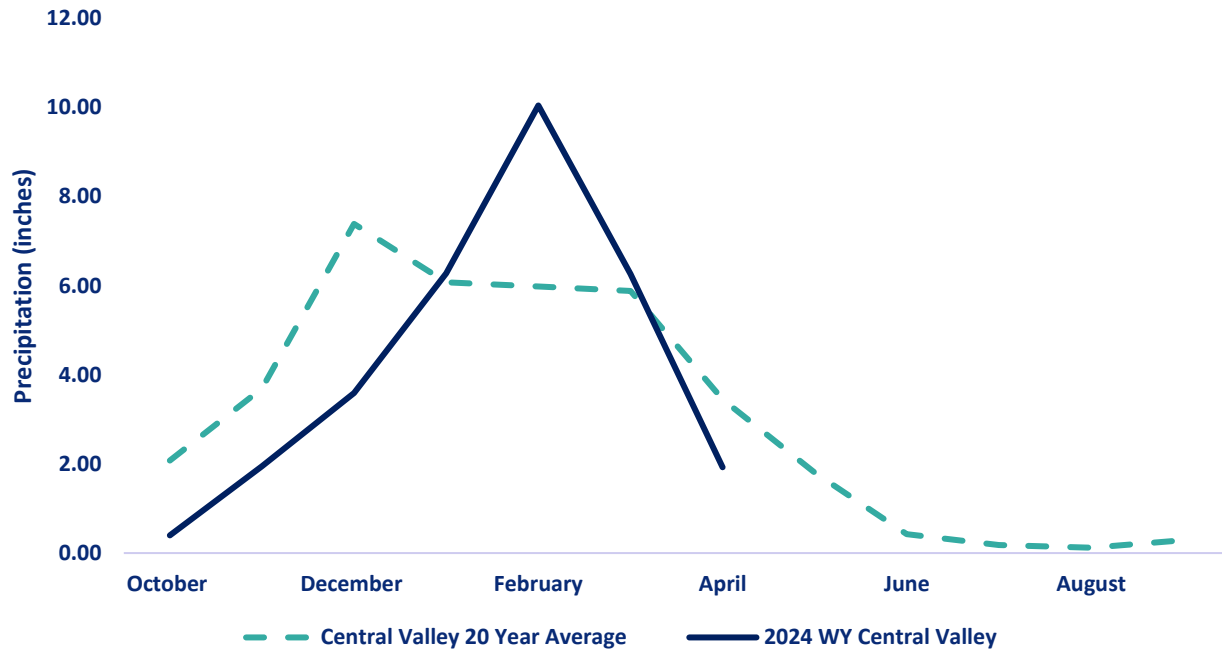
For the week ending on April 24th, the two-month futures volatility is at a premium of 3.73% to the index, down 0.41% from the previous week. The one-month futures volatility is at a discount of 2.78% to the index, up 1.85%. The one-week futures volatility is at a discount 1.14% to the index, down 9.93% from the previous week.

*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 24/04/2024

STATION	MTD (INCHES)	WEEK ON WEEK CHANGE (INCHES)	% OF 20 YEAR AVERAGE MTD	2024 WYTD VS 2023 WYTD %	2024 WY VS 20 YEAR AVERAGE TO DATE %
SAN JOAQUIN 5 STATION (5SI)	2.84	0.11	79.70	172	87
TULARE 6 STATION (6SI)	1.62	0.00	63.05	200	84
NORTHERN SIERRA 8 STATION (8SI)	1.32	0.00	31.34	129	93
CENTRAL VALLEY AVERAGE	1.93	0.04	55.87	167	88

RESERVOIR STORAGE

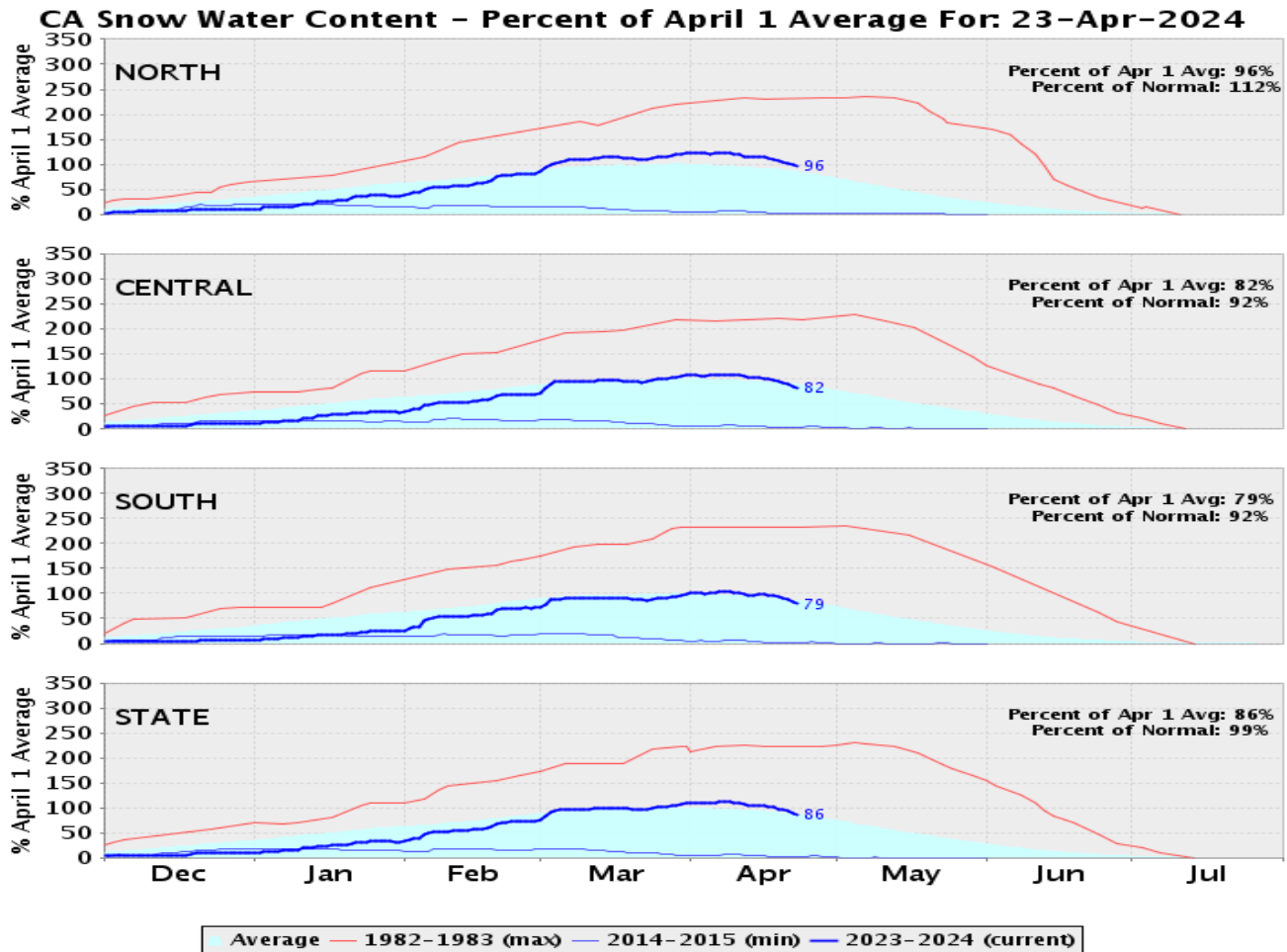
RESERVOIR	STORAGE (AF)	% CAPACITY	LAST YEAR % CAPACITY	*% HISTORICAL AVERAGE
TRINITY LAKE	2,098,707	84	35	112
SHASTA LAKE	4,380,309	96	95	116
LAKE OROVILLE	3,323,628	91	89	124
SAN LUIS RES	1,472,146	72	99	86

*% 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 2020. 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	27.3	-5.4	216	112	96
CENTRAL SIERRA	21.9	-5.1	248	92	82
SOUTHERN SIERRA	17.2	-2.9	289	92	79
STATEWIDE	22.2	-5	271	99	86

*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.



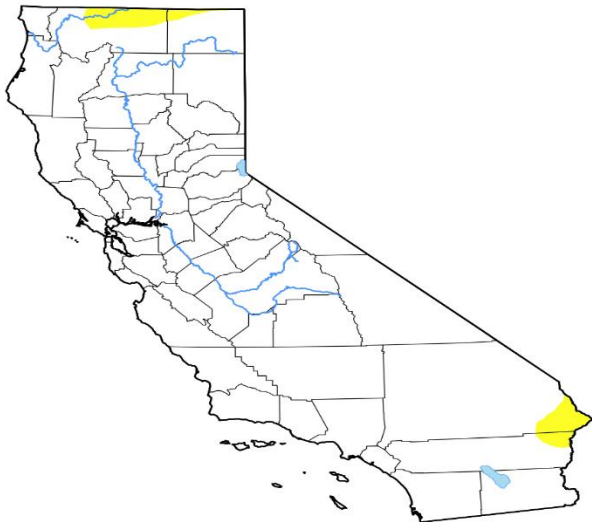
DROUGHT MONITOR

California

[Home](#) / California

Map released: Thurs. April 18, 2024

Data valid: April 16, 2024 at 8 a.m. EDT



Intensity

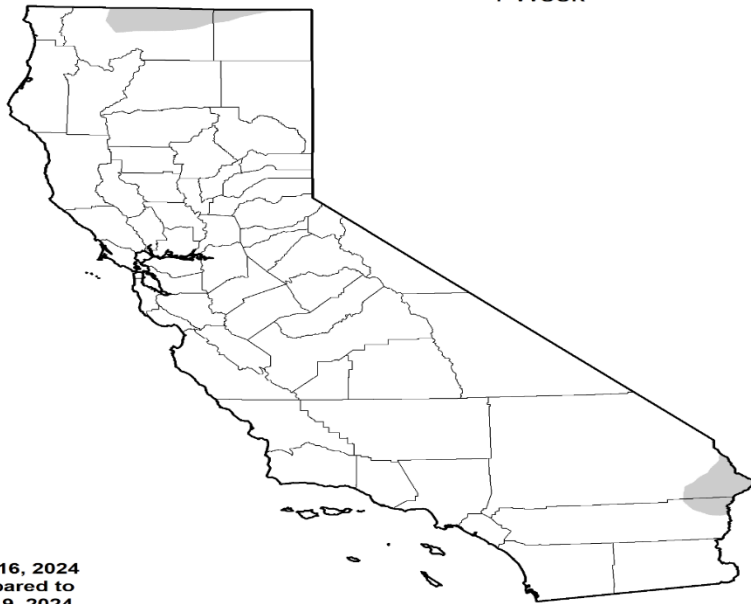
- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

Authors

United States and Puerto Rico Author(s):
[Lindsay Johnson](#), National Drought Mitigation Center

Pacific Islands and Virgin Islands Author(s):
[Tsegaye Tadesse](#), National Drought Mitigation Center

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



April 16, 2024
 compared to
 April 9, 2024



- 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	2024-04-16	97.32	2.68	0.00	0.00	0.00	0.00	3
Last Week to Current	2024-04-09	97.32	2.68	0.00	0.00	0.00	0.00	3
3 Months Ago to Current	2024-01-16	96.65	3.35	0.00	0.00	0.00	0.00	3
Start of Calendar Year to Current	2023-12-26	96.65	3.35	0.00	0.00	0.00	0.00	3
Start of Water Year to Current	2023-09-26	94.01	5.99	0.07	0.00	0.00	0.00	6
One Year Ago to Current	2023-04-18	65.67	34.33	8.79	0.00	0.00	0.00	43

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

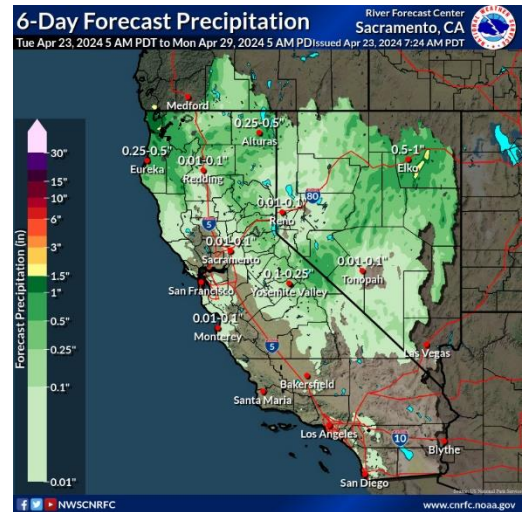
The satellite picture shows a Pacific frontal system moving onto the western Canadian coastline. This will bring precipitation to that area as far south as San Francisco. The Midwest has scattered clouds with a storm system over the Dallas area. The eastern US is relatively dry with a storm system exiting along the coastline of Maine.



10 Day Outlook

A few showers and thunderstorms developed over the Nrn and Central Sac Valley and over Nrn and Central NV this morning. Precip amounts generally 0.25 inches or less but local amounts to around 0.75 inches possible. Low clouds over the CA coast with deeper marine layer for possible drizzle/ light rain this morning. The shortwave trough shifts to the east out of the region Thursday as another shortwave trough approaches the Pac NW and Nrn CA coast and deepens over the region on Friday as another wave drops into the region. This will bring precipitation to the north, especially over the higher terrain on Thursday and spreading south on Friday. Precipitation amounts 0.5-1 inch for the Smith Basin and west slope of Srn OR Cascades and Ruby mtns and generally a third of an inch or less elsewhere over the higher terrain in the north on Thursday. Precipitation amounts for Friday generally around a quarter of an inch or less except locally to around a half an inch in the Nrn Mtns including the Srn OR Cascades and Ruby Mtns. Precipitation may stretch south along the Sierra and into Srn NV and possible a few showers over the San Bernardino Mtn into San Diego Count Mtns Friday.

Map Ref: Zoom Earth



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



WESTERN WEATHER DISCUSSION

The West saw conditions remain mostly the same, with areas in the Northwest seeing some improvements. Regions along the Pacific coast received some precipitation but not in areas needing moisture. There was some improvement in southern Oregon where precipitation did fall. Southern Idaho also saw improvement with the precipitation and decent snowpack. Northern Idaho into Montana did see some degradation, with mountainous areas seeing snow at extremely low levels. Western Montana experienced improvements in the east-central part of the state.

Reference:

Rocky Bilotta, NOAA/NCEI

Ahira Sanchez-Lugo, NOAA/NCEI



WATER NEWS

CALIFORNIA WATER NEWS

State Water Project Increases Projected Water Supply Allocation

The Department of Water Resources (DWR) today announced a further increase in the State Water Project (SWP) water supply allocation forecast for 2024. The forecasted allocation has increased to 40 percent, up from 30 percent last month. The State Water Project provides critical water supplies to 27 million Californians and farmers served by 29 public water agencies. Today's increase would provide an additional 420,000 acre-feet of water, enough water to serve an estimated 1.5 million households for a year.

Today's allocation update is based on an 800,000 acre-foot increase in storage at Lake Oroville and the latest snow survey data from the all-important April 1 measurements. April 1 is typically when California sees peak snowpack and the start of the snowmelt season. Statewide, the snowpack remains near average at 99 percent of average for this date. The spring forecast in the latest snow runoff report, known as Bulletin 120, also anticipates above average runoff this spring.

The State Water Project is working with the U.S. Army Corp of Engineers to manage flood releases and maximize the capture and storage of water from the winter storms and spring runoff in its reservoirs. Since January 1, storage has increased by 917,000 acre-feet at Lake Oroville and by 178,125 acre-feet at San Luis Reservoir. Oroville is currently at 124 percent of average and 94 percent of capacity and is expected to reach capacity next month.

During the spring, the ability to move water supply south through the system will continue to be impacted by the presence of threatened and endangered fish species near the State Water Project pumping facility in the south Delta. The presence of these fish species has triggered state and federal regulations that significantly reduce the pumping from the Delta into the California Aqueduct. This reduction in pumping has limited the ability to move and store water into San Luis Reservoir. This reduced pumping is expected to continue into late spring. The State Water Project anticipates increasing its pumping significantly this summer as soon as the fishery conditions and our State and federal operating permits allow.

"This year highlights the challenges of moving water in wet periods with the current pumping infrastructure in the south Delta. We had both record low pumping for a wet year and high fish salvage at the pumps," said DWR Director Karla Nemeth. "We need to be moving water when it's wet so that we can ease conditions for people and fish when dry conditions return. It's one more reason the Delta Conveyance Project, which would move water when the flows are high in a manner safer for fish, is a necessary climate adaptation project for California."



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Had the Delta Conveyance Project been in place this winter, the State Water Project would have been able to capture an additional 909,000 acre-feet of water since January 1. That's enough water for 9.5 million people, or 3.1 million households, for a year.

The updated State Water Project allocation forecast announced today anticipates delivery of 40 percent of requested supplies to contractors south of the Delta, which accounts for the majority of contractors; 65 percent of requested supplies to contractors north of the Delta; and 100 percent allocation to Feather River Settlement Contractors. Allocations are updated monthly as snowpack, rainfall, and runoff information is assessed, with a final allocation typically determined in May or June.

Original Article: [CA Dept. water Resources](#)

La Niña watch is on: How will it impact California's weather?

El Niño hasn't even grown cold, but national forecasters say its counterpart, La Niña, is already waiting in the wings to take over. The National Oceanic and Atmospheric Administration's Climate Prediction Center issued a La Niña watch Thursday, predicting the U.S. will be in a La Niña pattern by the end of summer.

For the past nine months, we've been under a strong El Niño, which typically brings a cold, wet winter for southern states and warmer, dry weather up north. Though we are still technically in an El Niño situation, NOAA meteorologists foresee it ending sometime between now and June.

Current conditions favor a switch to La Niña between June and August, NOAA said. It will likely grow stronger from there; La Niña and El Niño both tend to reach peak strength during winter.

It's winter when we'll feel La Niña's biggest impacts. A La Niña winter usually means dry, warmer-than-average conditions across the southern half of the country, including Southern California.

The Pacific Northwest and Ohio Valley tend to get more precipitation, and northern states can see extra-cold weather.

When we're in a La Niña, water along the Pacific coast is also colder and more nutrient-dense, according to the National Ocean Service. That's also good news for marine life, like salmon and squid, that live along the West Coast.

Whether we're in a La Niña year, El Niño year, or neither is determined by sea surface temperatures near the equator over the Pacific Ocean. The temperature of the water and air above it can shift the position of the jet stream, which impacts the types of weather we see on land.

The last time we saw La Niña conditions was just over a year ago, at the very start of 2023.

Original Article: MSN by [Alix Martichoux](#)



Salton Sea Authority approves \$2.7M budget

The Salton Sea Authority Board accepted public comments for a follow-up meeting invitation in the coordination of hydrology safety, and the implementation of funds toward Salton Sea restoration during their virtual meeting on Thursday, April 18.

Following public comments, the board approved the consent calendar and discussed the Review and Approval of the Salton Sea Authority 2024/2025 Budget of \$2,750,000.

The fiscally conservative budget didn't incorporate grant revenues expected from the Department of Water Resources or the Bureau of Reclamation-Desert Shores Revitalization but anticipated that 5% of outside revenues would support the balance of the Authority's work.

There was a call for community engagement to move the full implementation of the feasibility study on community stakeholders over the North Lake pilot and demonstration projects.

Nathan White, CEO and co-founder of Agess, Inc. spoke on the hydrology grant from the Bureau of Reclamation to improve hydrology. White suggested that to receive a vote from the community, the bill needs to be addressed as 'Western Water Restoration' instead of 'Salton Sea Restoration,' due by May 20th.

The board voted to approve the 2024/2025 budget.

The board discussed the outreach and education over contract implementation and extension. The SALTC action committee shared the series of Salton Sea tours scheduled with the state. It is open to the community, but requests for funds from SSA to plan for the upcoming events.

Susan Kennedy presented the review and approval of certain agreements necessary to effectuate the CADIZ donation to the Salton Sea Authority. Cadiz agreed to dedicate 5,000 acre-feet of water per year to the Salton Sea Authority and Torres Martinez Desert Cahuilla Indians ("Torres Martinez Tribe"), and that the Company will provide up to \$5 million to install pipeline infrastructure and well treatment technology on tribal lands.

Cadiz agreed to provide water to the Salton Sea and the Torres Martinez Tribe as part of the Company's commitment to ensure that clean, affordable water is available to disadvantaged communities through the Cadiz Water Conservation and Storage Project. "As California's water crisis deepens, Cadiz is committed to ensuring that disadvantaged communities are not left behind," said Executive Board Chair Susan Kennedy. "Cadiz's mission is to capture water that is currently lost to evaporation, store it in the desert and transport it through pipelines that once carried oil by retrofitting those pipelines to carry water."

The Cadiz Water Conservation and Storage Project, located in California's high desert, was originally designed to store water from the Colorado River and transport it to metropolitan Southern California through a single pipeline connected to the Colorado River Aqueduct. The new project design adds a second pipeline to the north, utilizing an



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existing 220-mile underground pipeline to connect with the State Water Project system. The underground pipeline, originally built to transport oil, will be retrofitted to carry water to and from underground storage systems between the Colorado River and the State Water Project.

Original Article: [The Desert Review by Amy Reyes](#)

Mesa announces \$1.75 million federal investment in 2 water infrastructure projects

Democratic Rep. Greg Stanton announced the \$1.75 million that will support two water infrastructure projects during a Monday press conference at the Mesa Arts Center.

“The most pressing issue facing communities across Arizona right now is the future of our water supply,” Stanton said. “Protecting the long-term health of the Colorado River is essential and we are working hard at the federal level to combat this historic drought in the West.”

Stanton, who serves as Arizona’s U.S. House representative in District 4, said the two projects will help city leaders reduce water waste.

What Mesa water services are benefitting from the \$1.75M in federal funds?

The first project will make critical improvements to the city’s water mains, Stanton said. The federal government will spend almost \$1 million on this initiative.

“These federal funds will go to inspect, repair and upgrade the city’s water pipes,” he said.

That means defects, corrosion and thinning in pipes will be caught early on.

“The city of Mesa manages one of the largest pipe infrastructure systems in Arizona, more than 2,500 miles of water mains, and some of those water mains are 50 years old, meaning they’re vulnerable to cracks and breaks,” Stanton said.

Leaks in the decades-old system can disrupt the city’s water users and lose millions of gallons of water, he said.

“Second, we’re investing \$800,000 dollars to install 12,000 smart meters for Mesa’s water customers,” Stanton added.

This second project means devices will monitor residents’ water usage in real time. Authorities will be able to quickly address any unusual activities or leaks, he said.

“These water meters have been shown to reduce household water usage by nearly half: 46%. That’s not just conserving water,” Stanton said. “It is saving families money — and it’s saving tax dollars.”

Original Article: [KTAR News by Serena O’Sullivan](#)

In California’s Central Valley, large farms have depleted the groundwater. Now, they’ll have to pay

In much of the United States, groundwater extraction is unregulated and unlimited. There are few rules governing who can pump water from underground aquifers or how



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much they can take. This lack of regulation has allowed farmers nationwide to empty aquifers of trillions of gallons of water for irrigation and livestock. Droughts fueled by climate change have exacerbated this trend by depleting rivers and reservoirs, increasing reliance on this dwindling groundwater.

In many places, such as California's Central Valley, the results have been devastating. As aquifers decline, residential wells start to yield contaminated water or else dry up altogether, forcing families to rely on emergency deliveries of bottled water. Large-scale groundwater pumping has also caused land to sink and form fissures, threatening to collapse key infrastructure like roads, bridges, and canals. These local impacts have been the price of an economic model that provides big farmers with unlimited access to cheap water.

At a tense 12-hour hearing that lasted well into the night last Tuesday, California officials struck a big blow against that model. The state board that regulates water voted unanimously to take control of groundwater in the Tulare Lake sub-basin, one of the state's largest farming areas, imposing a first-of-its-kind mandatory fee on water pumping by farmers in the area.

The decision to place the basin's water users on "probation," a punishment for not managing their water effectively, could force some of the region's largest land barons to pay millions of dollars in fees or stop cultivating huge sections of their farmland.

The vote sets up a high-stakes enforcement fight with some of the state's most powerful farmers, who have fought for years to avoid state intervention on their profitable dairy pens and tomato fields. The state will start measuring water usage and collecting fines later this year, but it has never attempted any such enforcement action before, and there is no way to know yet whether farmers will comply with the fees.

The larger question is whether the state's policing effort will succeed in forcing a long-term reduction in groundwater usage in the state's agricultural areas. The success or failure of this effort matters not just for California but also for many other pasture-rich states, from Nevada to Nebraska, that are trying to police their groundwater. If the Golden State can cut water usage without causing political or economic upheaval, it will leave a blueprint for other states trying to manage scarce water.

"Groundwater is one of these collective resources where your pumping has an impact on a lot of other people, and you have to have a mechanism to manage that," said Ellen Hanak, an economist and water expert at the Public Policy Institute of California, a think tank. "I seriously doubt that the state wants to be taking over basins and managing them, but there has to be a backstop."

The probation vote for Tulare Lake comes almost a decade after the California lawmakers passed the landmark Sustainable Groundwater Management Act, which requires water users in threatened areas across the state to draft plans for healing their depleted aquifers by 2040. The Central Valley pumps around 7 million acre-feet of



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groundwater per year, enough to supply more than 15 million average American households, and almost all of it is used for agriculture.

Original Article: [Fast Company by Jake Brittle/ Gist](#)

Kern water managers concerned about new well permitting bill; “produced” water report and a new water/solar agreement

Steve Torigiani, the district’s attorney, said Assembly Bill 2079, which would add new requirements to agricultural well permitting, could pose problems for the district. Torigiani expressed three main issues with the bill.

First, he said, Kern County would not be able to issue a well permit if the well is located near a domestic well. Second, if the well is near an area that has subsided (or sunk) more than half a foot since Jan 1, 2015, a permit could not be issued. Third, new wells must be screened for their potential impacts on the area’s “minimum threshold.” Under the Sustainable Groundwater Management Act, water agencies must set minimum water table levels, called minimum thresholds, in order not to over pump aquifers.

Torigiani said the Association of California Water Agencies (ACWA) and the Valley Ag Water Coalition (VAWC) as well as other organizations oppose AB 2079.

However, he noted that since the Department of Water Resources had a hand in crafting the bill, there is an effort to propose amendments.

Torigiani also spoke against the Assembly Member who wrote the bill, Steve Bennett, saying he has put forth many well permitting bills, but this one is worse than all the others.

Original Article: [SJV Water by Sonia Lemus](#)

Cadiz Announces Water Supply Agreement with Solstra Communities to Support Bold Attainable Housing in Santa Barbara County

Cadiz, Inc. (NASDAQ: CDZI / CDZIP, the “Company”) announced today that the Company and Fenner Gap Mutual Water Company (“Fenner Gap”) signed a water supply agreement with Solstra Communities California LLC (“Solstra”) for delivery of 1,275 acre-feet per year of water from the Cadiz Water Supply and Storage Project to support development of more than 4,000 homes for military and working families along the Central California coast.

Today’s announcement is the first time Cadiz has contracted with a housing developer for water supply. Water supply from Cadiz will be delivered through exchanges of water with regional water contractors utilizing the Company’s Northern Pipeline, a 220-mile natural gas pipeline originally built to transport oil from the California coast to Texas oil refineries. The water supply agreement announced today (“Solstra Agreement”) follows execution of three additional water supply agreements entered since the beginning of



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the year reserving a total of 15,000 acre-feet per year (AFY). Following execution of the Solstra Agreement, 65% of the capacity of Cadiz's Northern Pipeline is under contract.

"We need water to solve the housing crisis in California," said Susan Kennedy, CEO of Cadiz, Inc. "We are proud to work with innovative companies like Solstra who are at the forefront of building sustainable communities with safe neighborhoods and affordable homes for working families."

Solstra, owner of private land near Vandenburg Space Force Base, is pursuing development of up to 4,000 sustainable housing units, parks, trails, open space, to support military families and a diverse workforce in the aerospace industry as well as education, manufacturing, and healthcare services in the area. Approximately 70% of the homes are intended for working families and first-time buyers.

In a statement about the Agreement, Solstra said: "Solstra's vision for Solomon Hills is to create attainable homes for working families in a new, sustainable community. Cadiz's innovative approach to deliver sustainable, clean, reliable, affordable water to meet California's housing needs is aligned with Solstra's bold vision for the Solomon Hills project. Solstra is excited to partner with Cadiz, and for Cadiz to become part of a diverse portfolio of water supply sources needed for a development of the scale."

Under California's state housing plan, one million of the 2.5 million required homes that must be built by 2030 to address the state's urgent housing crisis must meet the needs of lower-income households. California law also requires new housing development to demonstrate access to reliable water prior to construction.

Under the terms of the Solstra Agreement, water supply will be made available to Solstra via the Coastal Branch of the State Water Project through an exchange with one or more contractors of the California State Water Project. Cadiz expects to receive net revenue of approximately \$850 per AF in 2024 dollars for water purchased by Solstra over the contract term.

The Company's Northern Pipeline has a delivery capacity of 25,000 AFY. Following execution of the Solstra Agreement, approximately 65% of the delivery capacity of the Northern Pipeline, or 16,175 AFY, has been reserved under water supply agreements, with the remaining capacity in the final stages of contracting.



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The Company anticipates final development of the Northern Pipeline conversion project will occur in 2024, with construction beginning in 2025 and commencement of water delivery as early as 2026.

Original Article: [Cadiz Inc.](#)

US WATER NEWS

Michigan gets \$290M boost for water upgrades as Flint crisis anniversary nears

Michigan will soon deploy \$290 million in bonding authority to boost lead pipe replacements and update drinking water and sewer systems across the state, Gov. Gretchen Whitmer announced Monday.

The money comes from the 2002 voter-approved Great Lakes Water Quality Bond, which the state is preparing to spend down as part of a \$500 million water strategy that Whitmer first unveiled in 2020.

Announcing the funding on Earth Day and just three days before the 10th anniversary of the Flint water crisis, Whitmer said “safe drinking water must be a guarantee.”

“Every parent should have the confidence to give their child a glass of drinking water from the sink when they sit down at the table,” Whitmer said, while acknowledging that Michigan has too often “fallen short on that promise.”

In the decade since Flint’s notorious water crisis, lawmakers have ramped up spending on water infrastructure primarily by funneling billions of federal COVID stimulus and infrastructure dollars to the cause.

The biggest infusion came in 2022, when lawmakers passed a bipartisan spending bill that included nearly \$2 billion for water systems.

Yet as Bridge Michigan has reported, Michigan needs even more.

Communities across the state are contending with aging infrastructure, frequent breakdowns and steep rate hikes after decades of deferred maintenance.

The root causes: Past political pressure to keep water rates low, which shifted maintenance costs onto today’s users; a long-term decline in federal funding for water infrastructure, and suburban sprawl that has added more pipes, plants and pumps, even while Michigan struggled to maintain its existing inventory.

Phil Roos, director of the Michigan Department of Environment, Great Lakes and Energy, said the bond money will enable EGLE to dole out more grants and loans to repair water treatment plants, upgrade sewers, remove lead lines and more.

But he acknowledged “we have a lot more to do.”



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Then-Gov. Rick Snyder's 21st Century Infrastructure Commission recommended in 2016 that the state spend nearly \$1 billion annually on water infrastructure upgrades over the next two decades. The price tag has only grown in the years since. This year, Roos said, local governments have asked his agency for a combined total of \$3.5 billion in water funding. Even with the \$290 million boost announced Monday, EGLE only expects to be able to fulfill about 28 percent of those requests.

Beyond seeking more money to maintain its water systems, experts say Michigan communities should consider consolidating water systems to regain cost-efficiencies that were lost by sprawl.

For instance, Benton Harbor's water system now operates at just a tenth of its capacity, in part because two neighboring townships left the system and built their own plants just down the road.

The combined capacity of three water plants within a few miles of each other could serve the region multiple times over.

Original Article: [Bridge Michigan by Kelly House](#)

AI is taxing Arizona power, water and residents

Arizona is at risk of straining its power grid as AI servicing data centers proliferate around Maricopa County, leaving power companies rushing to meet developer demand, without compromising safety, service or increasing consumer costs.

According to the International Energy Agency, 2,700 data centers consumed more than 4% of the country's total electricity in 2022. The agency projects this will reach 6% by 2026.

Analysts believe the Phoenix area has been at the forefront of data demand, trailing only Ashburn, Virginia, for data center absorption. With the growing demand for AI, data center storage capacity nationally is expected to grow 98% from 10.1 zettabytes in 2023 to 21.0 ZB in 2027.

"Consumers and businesses are expected to generate twice as much data in the next five years as all the data created over the past 10 years," suggested analysts at JLL, a global commercial real estate and investment management company.

The growth of AI is a significant driver of the increased demand for power in Arizona. In 2023, Arizona experienced the hottest July in recorded history, setting a new record for energy demand.

Because of significant growth in demand, officials with Arizona Public Service Co., the state's largest utility, said customers will require more than 13,000 megawatts of energy by 2031, which they are committed to delivering. APS also believes peak demand will grow by 40% from today's levels in less than seven years.

"While we are well prepared to manage Arizona's existing above-average growth, like many other communities and utilities around the country, we are working to meet the



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extremely large resource needs of the data center sector,” said APS media rep Ann Porter.

To put it in perspective, APS said it currently has requests for more than 10,000 megawatts of energy beyond what's already committed. Palo Verde Generating Station, the nation’s largest energy producer, generates 4,000 MW.

“A large grocery store’s peak energy demand is about 1 MW,” Porter said. “A large data center’s energy demand can range from 250 MW to 1,000 MW.”

A fourth of Palo Verde's energy can be considered significant, but so is the money generated from such developments.

In a recent 529-acre data center development application with Maricopa County, developers suggested Maricopa County could generate \$81 million a year in taxes or approximately \$1.6 billion over 20 years.

The current proposed application, however, has received some pushback from cities.

“There is opposition from both the city of Buckeye and the city of Goodyear,” a Maricopa County rep stated. “APS may not have sufficient power for the proposed facility, but that has not been confirmed. At this time, Planning and Development are not supportive of this proposal.”

Salt River Project experiences unprecedented demand from the same types of users in the East Valley. SRP’s recent integrated system planning process determined the utility will need to double or triple its current capacity during the next decade to meet projected growth in electric power demand while simultaneously becoming more sustainable.

“This plan accounts for the significant, forecasted growth from high-tech manufacturing and industrial customers building data centers in our service territory,” said SRP media rep Jennifer Schuricht. “Data center electricity demand is relatively higher during the night than other types of customers. SRP’s system will grow in a manner that supports new and evolving customer needs throughout the day and night. “

SRP supports data center customers such as Meta and Google in Mesa to help them offset their energy use with renewable resources.

In 2023, SRP approved an average monthly customer rate increase of about \$11.88.

In February, APS increased rates after the state approved its request to “allow the company to continue critical investments.” The rate increase resulted in an average consumer bill increase of roughly 8%, or about \$10.50 monthly.

Original Article: [Your Valley by Michael McDaniel](#)

Construction begins on \$16M Ishpeming sewer infrastructure project

Construction began Monday on an extensive sewer infrastructure project in Ishpeming. Starting Monday, Elm Street near the Marquette County Road Commission is closed to through traffic for construction. Crews began digging up the old sewer lines. The



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construction is part of a \$16 million plan to replace 60-90 year old pipes. A grant covers half of the cost, and the other will be paid in a low-interest 40-year loan.

Ishpeming City Manager Craig Cugini said the aging clay-based pipe will be replaced with a more sturdy PVC pipe.

“There’s probably about 25,000 linear feet maximum that will be covered by this. It depends on what the project totals come to after they get to digging and finding what the challenges are and how much the product is. We are going to stretch it as far as we can,” Cugini said.

The city manager said no one should see an interruption in sewer service. The entire project is expected to last at least a year.

Cugini said if a street needs both its sewer and water line replaced, both will be done next year. That is when the city will receive an additional \$20 million for water line replacement. Cugini said this would prevent digging up the same street twice.

Original Article: [Upper Michigan Source by Clint McLoed](#)

Biden-Harris Administration Announces New Interagency Effort to Support Tribal Water and Sanitation Infrastructure

The Department of the Interior’s Bureau of Reclamation and Indian Health Service (IHS) today announced a new Memorandum of Understanding to further develop safe drinking water and community sanitation infrastructure projects across Indian Country. Principal Deputy Assistant Secretary for Water and Science Michael Brain made the announcement at the White House’s first-ever Clean Water Summit, alongside Indian Health Service Deputy Director Benjamin Smith and Yakama Nation Chairman Gerald Lewis. Reclamation Commissioner Camille Calimlim Touton also spoke on a panel at the event to uplift Reclamation’s investments in climate and drought resilience across the West.

Through the Memorandum of Understanding, the agencies will collaborate to complete studies, planning and design to be used in constructing domestic water infrastructure projects. The collaboration is aimed at accelerating completion of such facilities in Tribal communities. The MOU follows President Biden’s Executive Order 14112, which directs federal agencies to work together to remove barriers and streamline Tribal access to resources.

“At the Interior Department, we know that having modern water infrastructure is not only crucial to the health of our kids and families – it’s also important for economic opportunity, job creation and responding to the intensifying effects of climate change,” said Principal Deputy Assistant Secretary for Water and Science Michael Brain. “Through this new agreement, and historic resources from President Biden’s Investing in America agenda, we are taking a significant stride towards ensuring essential water and sanitation infrastructure throughout Indian Country.



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“This Administration’s all-of-government approach allows us to leverage funds from historic investments through President Biden’s Investing in America Agenda to go even further for Tribal communities,” said Commissioner Camille Calimlim Touton. “Reclamation is pleased to work with the Indian Health Service in exploring opportunities for projects with the Yakama Nation and other Tribes to initiate implementation of this MOU.”

A potential pilot project under this agreement has been identified on the Yakama Reservation in Washington State. After an IHS engineering investigation confirmed high levels of arsenic in the water system of the small community of Georgeville, the Yakama Nation and IHS agreed to construct a treatment system to remove arsenic from the water supply using Bipartisan Infrastructure Law funding. The MOU allows the Bureau of Reclamation to provide technical support for this and future projects.

“Having access to safe and reliable water systems is an essential matter of public health,” said Indian Health Service Director Roselyn Tso. “Unfortunately, far too many Native American communities are still awaiting these basic services. The Indian Health Service appreciates the Biden Administration’s historic multi-billion-dollar investment in water and sanitation infrastructure in Indian Country. This agreement with the Bureau of Reclamation will accelerate completion of these critical projects and reduce barriers for our tribal nations to partner with our agencies.”

In 2022, Reclamation joined the Federal Infrastructure Task Force to Improve Access to Safe Drinking Water and Basic Sanitation to Tribal Communities. With new resources provided through the Bipartisan Infrastructure Law and Inflation Reduction Act, the Bureau has committed significant funding towards Tribal water infrastructure projects. Earlier this month, the Bureau made \$320 million available for Tribal domestic water supply projects, as part of an overall \$550 million allocated through the Inflation Reduction Act and as part of President Biden’s Justice40 Initiative for domestic water assistance for disadvantaged communities. The Indian Health Service is currently in its third year of funding water and sanitation projects through a \$3.5 billion investment from the Biden-Harris administration, and today announced allocation decisions of \$700 million in Fiscal Year 2024.

President Biden’s Investing in America agenda represents the largest investment in climate resilience in the nation’s history and is providing much-needed resources to enhance Western communities’ resilience to drought and climate change, including providing significant resources towards expanding access to clean water in Tribal communities. The Bureau of Indian Affairs has also dedicated \$250 million from the Bipartisan Infrastructure Law towards repairing Tribal water infrastructure – including dams, irrigation, and water sanitation systems.

Original Article: [US DOI](#)



GLOBAL WATER NEWS

Hedge fund Elliott Management scoops up Thames Water bonds

US hedge fund Elliott Management has been buying the bonds of troubled British utility company Thames Water, in a bet that markets have grown too pessimistic over the size of losses that investors may have to take on the debt. Elliott, which manages about \$65bn in assets and is known for its aggressive approach to corporate and sovereign debt restructuring, had built a position in the heavily-indebted water company's bonds at a discount to face value in recent weeks, according to three people with knowledge of the trade. Thames Water — which supplies 16mn people in London and the surrounding area, or about a quarter of the population of England and Wales — has suffered a sharp drop in its bond prices after its parent company defaulted on its debt earlier this month. Elliott's bet is focused on the top-ranking bonds out of more than £16bn of debt within a so-called regulatory ringfence — which surrounds the core utility and means it has to abide by regulatory conditions. Some of these bonds are trading at little over 70 pence in the pound, as investors have grown more nervous about the potential for deep impairments. One person with knowledge of the position said these levels were lower than Elliott's worse-case expectations for these bonds, and the hedge fund firm believes the debt could potentially make it out of Thames Water's present crisis unscathed. Two of the people said that Elliott's position was relatively small and it was still evaluating whether to build it to a more material holding. Elliott declined to comment. Government contingency plans for a potential nationalisation of Thames Water, which has become a focus for public anger over sewage pollution and mistrust of England's privatised water system, emerged last week. They mooted that the £15bn of top-ranking bonds could face losses of 5-10 per cent in the event that the utility has to come back under public control. The £1.3bn of so-called class B debt, which is still inside the ringfence but has a lower-ranking claim on the company's cash flows, could be hit with even deeper 35-40 per cent impairments. While Elliott has a long record of distressed debt investing, it is best known in the UK for its activist equity bets, including pushing for change at pharmaceuticals group GSK and more recently at Scottish Mortgage Investment Trust. Elliott is just one of a number of distressed debt investors that have rushed to buy Thames Water's bonds in the belief that nervous fund managers are selling them for less than they are worth. The hedge fund has stayed clear of bonds at Thames Water's holding company Kemble, however, which sit outside the regulatory ringfence and are trading at less than 15 pence. While Elliott is known for its hardball tactics with creditors — for instance seizing an Argentine naval vessel during a protracted tussle



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with the Latin American nation — British water company legislation restricts the ability of bondholders to seize assets if Thames Water is unable to service its debts.

Original Article: [The Financial Times by Robert Smith and Arash Massoudi](#)

India: How Water Pollution Triggers Migration Waves

In 2024, pollutants contaminating groundwater affected over two million people in India. What drives this trend and what can be done to reverse it? Farmers and experts offer their insights.

Sunil Kumar, 45, a former resident of Bindhroli - a village in Haryana approximately 30 kilometres from India's capital, New Delhi - relocated to Sonipat, about 44 kilometres from the capital, with his family after escalating water contamination in his hometown compelled them to leave.

"Several industries have been established around our village over time, and life has been difficult since then," Kumar told FairPlanet. "Many people, including myself, have migrated to bigger cities in the hope of a better lifestyle and clean drinking water, which has become a luxury in rural communities."

"A majority of them are forced to stay back and work in the same factories that are causing this bane due to a severe lack of options in employability," he added.

Several industries, including those producing textiles, food, paper and pharmaceuticals, discharge significant amounts of untreated wastewater directly into nearby water sources - a practice that is widespread in India. In major cities, approximately 38.3 billion liters of wastewater are produced daily, but only 60 per cent undergoes treatment. As a result, the untreated wastewater contaminates the underground water supplies of adjacent villages.

When wastewater is not properly segregated, it releases toxic substances such as heavy metals, acids and pesticides, leading to significant health and occupational hazards.

Bindhroli is but one of many Indian villages plagued by water pollution, and people from several hundred villages across the country are migrating to urban centres in search of better drinking water facilities.

FAILING CROPS

Industrial development in rural India, which began in the late 1990s, has transformed small-scale cities into industrial hubs. But while this trend has spurred significant market growth, it also severely deteriorated water quality standards in rural communities.

In 2024, over two million people were affected by pollutants contaminating groundwater in India. And while heavy metals and nitrate emerged as the main pollutants, arsenic and fluoride contamination has increased in number as well.

As of December 2023, water contamination from arsenic and fluoride affects approximately 230 districts in 25 states and 469 districts in 27 states across India, respectively.



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Multiple water quality assessment tests conducted by The Central Ground Water Board under the Ministry of Jal Shakti (Ministry of Water Power) indicate that groundwater, a crucial resource for industrial, domestic and agricultural sectors, is consistently contaminated beyond acceptable limits. According to a report by the Central Ground Water Board, approximately 85 per cent of the rural population in the country uses groundwater to go about their daily activities.

Dharam Singh, a former resident of Akhbarpur Barota, a small village in Haryana State with a population of 4,000, moved to New Delhi to save his family from the environmental hazards arising from water pollution. In recent years, Akhbarpur Barota has seen a surge in industrial activity, with many of these industries failing to implement proper water disposal techniques.

"The nearby industries use cheap disposable methods to dispose of the chemical water into the underground water supply in the name of rainwater harvesting," said Singh. "A majority of the residents in my hometown used tap water to go about their daily activities such as cooking, cleaning and drinking water; now we have to think twice before doing the same."

Some industries resort to inexpensive disposal methods for their wastewater, such as direct discharge into nearby water bodies, thus promoting environmental malpractices. Furthermore, this wastewater is often discarded onto agricultural lands in rural communities, which are used for farming.

"This issue has specifically targeted the livelihood of farmers within these villages," Singh added. "Managing farmlands and crop growth is a task on its own, and now with the arsenic contamination of groundwater their income is at [further] risk."

Pradeep Kumar, the elected head of 48 villages in the Sonipat district of Haryana, told FairPlanet that contamination of the underground water supply has been an issue in all the nearby villages since 2013.

"When more than five complaints on this matter were reported to me and many other senior officials serving these villages, we decided to conduct an audit and have a conversation with the Haryana pollution control board along with many health centres," he said.

"The inaction led to several villagers just accepting their fate. While employability and financial constraints play a role in this, the inactiveness of the local authorities is one of the root causes."

Residents with the means install home-based water filtration systems, such as reverse osmosis units, to mitigate the hazards of contaminated water. But the majority who cannot afford these systems continue to suffer from the adverse effects.

Original Article: [Fair Planet by Lavanya Jha](#)

Thames Water crisis prompts jitters over 'gold standard' debt model



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Cracks in the financial plumbing of Thames Water's complex corporate structure are making debt investors nervous about a supposedly safe financial model widely used across Britain's privatised utilities and essential infrastructure. The growing crisis at the company this month triggered a default at its parent firm, which has ricocheted down to hit securitised bonds at the operating companies that were long thought to be bulletproof. The government is now working on contingency plans to nationalise Britain's biggest water company that include mooted losses for these bondholders. One tier of debt in the more than £16bn of borrowings within the so-called regulatory ringfence — which surrounds the core utility and means it has to abide by regulatory conditions — plunged to little over half of its face value. The fall highlights how bondholders are now bracing for severe writedowns, even though their investments are supposedly firewalled from trouble at the parent company. The bonds are part of a so-called “whole business securitisation” (WBS), a financing technique used both across the UK's water industry and also for other infrastructure assets and regulated utilities that typically benefit from a consistent revenue stream linked to inflation. The model, in which Thames Water's cash flows service different tiers of debt, tends to result in higher investment-grade ratings for top-ranked bonds than standard corporate bonds at companies with similar levels of debt. Thames Water's woes are making investors nervous that the debt underpinning the funding model, which the UK government is relying on for the building of new critical infrastructure, could be more vulnerable to losses than previously thought.

Original Article: [The Financial Times by Euan Healy and Robert Smith](#)

Drought, food shortages and deadly heat: El Niño has ended but its impacts are still being felt

El Niño has been changing global weather patterns with deadly consequences around the world.

Australia's weather bureau has said the El Niño weather event has now ended as temperatures appear to have “cooled substantially” in the last week.

The naturally occurring phenomenon began in June last year bringing warmer waters to the surface of the Pacific Ocean.

March was the tenth month in a row where the world set a new monthly record for heat, according to the EU's Copernicus Climate Change Service.

While climate scientists attribute most of the heat to human-caused climate change, they say the consecutive records aren't exactly surprising given the strong El Niño conditions.

Temperatures over the next few months will indicate just how much recent records are down to global warming. But, bringing marine heatwaves across large parts of the world's oceans, the phenomenon has been changing global weather patterns with deadly consequences.



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Drought and electricity rationing in South America

El Niño usually causes lower rainfall in South America. Over the last few months, it has brought record temperatures and drought with some countries having to introduce emergency measures.

In Ecuador, droughts linked to El Niño have led to electricity rationing. Hydroelectricity produces around three-quarters of the country's power and with reservoirs running low, supplies are short.

"Each kilowatt and each drop of water that are not consumed will help us face this reality," Ecuador's Ministry of Energy said on Tuesday.

It comes just days after dry weather in Colombia forced water rationing in its capital city Bogotá. Reservoirs have also reached record lows here, threatening supplies of tap water.

The city's Mayor Carlos Fernando Galán said homes which use more than 22 cubic metres of water per month will have to pay additional fees and those wasting water could face fines.

Colombia also relies heavily on hydropower and stopped exporting energy to Ecuador in early April to conserve domestic supplies. Wildfires have been raging around the country's capital during the extended hot, dry spell.

Is El Niño to blame for drought and extreme heat in Africa?

A deadly heatwave swept across West Africa and the Sahel last month with temperatures soaring above 48C in Mali.

New research from World Weather Attribution (WWA) suggests that climate change made temperatures up to 1.5C warmer in Mali and Burkina Faso. During the entire five-day heatwave, temperatures across the Sahel region were up by 1.4C due to global warming, WWA says.

The report adds that, while people in both countries are acclimated to high temperatures, the length and severity of the heatwave made it more difficult for them to cope. Power cuts also compounded its effects.

Though El Niño did have some influence on extreme temperatures, it was small when compared to human-induced climate change.

Earlier this year, low rainfall also caused crop failure in southern Africa. Aid agency Oxfam warned that more than 20 million people were facing hunger, malnutrition and water scarcity because of the drought. Water shortages in Zimbabwe and Zambia led to disastrous outbreaks of cholera.

This drought, experts say, is more likely to have been a result of El Niño. The peak of the weather phenomenon in December reduced rainfall across southern Africa between December and February.

Heat triggers state of emergency and school closures in Southeast Asia

Searing heat has also been causing problems across Southeast Asia.



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Earlier this month, Vietnam declared a state of emergency due to high temperatures. In the Philippines, hundreds of schools closed as parts of the country reached 42C. Thailand has been suffering from unusually high temperatures, breaking records for 13 months straight.

The death of a toddler in Malaysia during a heatwave has highlighted the health risks of climate change.

Original Article: [Euronews Green by Rosie Frost](#)

China's Cities Are Sinking Below Sea Level, Study Finds

As China's cities grow, they are also sinking.

An estimated 16 percent of the country's major cities are losing more than 10 millimeters of elevation per year and nearly half are losing more than 3 millimeters per year, according to a new study published in the journal Science.

These amounts may seem small, but they accumulate quickly. In 100 years, a quarter of China's urban coastal land could sit below sea level because of a combination of subsidence and sea level rise, according to the study.

"It's a national problem," said Robert Nicholls, a climate scientist and civil engineer at the University of East Anglia who reviewed the paper. Dr. Nicholls added that, to his knowledge, this study is the first to measure subsidence across many urban areas at once using state-of-the-art radar data from satellites.

Subsidence in these cities is caused in part by the sheer weight of buildings and infrastructure, the study found. Pumping water from aquifers underneath the cities also plays a role, as do oil drilling and coal mining, all activities that leave empty space underground where soil and rocks can compact or collapse.

Beijing is among the places in the country sinking the fastest. So is nearby Tianjin, where last year thousands of residents were evacuated from high-rise apartment buildings after the streets outside suddenly split apart. Within these cities, sinking is uneven. When pieces of land next to each other subside at different rates, whatever is built on top of that land is at risk of damage.

Asia's heat wave scorches hundreds of millions. Hundreds of millions of people in South and Southeast Asia were suffering from a punishing heat wave that has forced schools to close, disrupted agriculture, and raised the risk of heat strokes and other health complications.

Carbon dioxide levels passed a new milestone. According to data released by the National Oceanic and Atmospheric Administration's Global Monitoring Laboratory, last year had the fourth-highest annual rise in global carbon dioxide levels.

Drought pushes millions into hunger. An estimated 20 million people in southern Africa are facing "acute hunger" as one of the worst droughts in more than four decades shrivels crops, decimates livestock and, after years of rising food prices, spikes the price of corn, the region's staple crop.



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China's cities are sinking. An estimated 16 percent of the country's major cities are losing more than 10 millimeters of elevation per year and nearly half are losing more than 3 millimeters per year because of development and groundwater pumping, according to a new study.

Other countries, including the United States, have similar problems.

"Land subsidence is an overlooked problem that almost exists everywhere," said Manoochehr Shirzaei, a geophysicist at Virginia Tech who has studied subsidence in American coastal cities using similar methods. Dr. Shirzaei also reviewed the new study on Chinese cities by Zurui Ao of South China Normal University, Xiaomei Hu and Shengli Tao of Peking University, and their colleagues.

"I believe the majority of the adaptation strategies that we have, and resiliency plans to combat climate change, are inaccurate, just because they did not include land subsidence," he said. "It hasn't been studied the way, for example, sea level rise has been studied."

The new study was based on satellite radar measurements of how much the ground surface in 82 major cities, accounting for three-quarters of China's urban population, moved up or down between 2015 and 2022. The researchers compared these measurements to data on potential contributing factors, like the weight of buildings in these cities and changing groundwater levels underneath them.

The researchers also combined their subsidence measurements with projections of sea level rise to figure out which cities might end up below sea level. One caveat with these findings is that they assumed a constant rate of subsidence over the next 100 years, but these rates can change along with human activity.

About 6 percent of land in China's coastal cities currently has a relative elevation below sea level. If the global average sea level rises by 0.87 meters, or a little less than 3 feet, by 2120 (the higher of two commonly used scenarios considered by the researchers) that proportion could rise to 26 percent, this study found.

Being below sea level doesn't mean a city is automatically doomed. Much of the Netherlands is below sea level and sinking, but the country has been extensively engineered to prevent flooding in places and to accommodate it in others.

The key to minimizing damage is limiting groundwater extraction, the researchers wrote. Shanghai is already taking this approach and is sinking more slowly than other Chinese cities. In Japan, groundwater management over the years has proved successful at stabilizing subsidence in Tokyo and Osaka.

Some places are even combating subsidence by injecting water into depleted aquifers in a process called managed recharge.



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It's difficult to stop subsidence entirely, Dr. Nicholls said. "You've got to live with what's left." Mainly, he said, this means adapting to sea level rise in coastal areas; not just the sea level rise caused by climate change, but also the effects of sinking land. Original Article: [The New York Times by Delger Erdenesanna](#)

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