

# Veles Water Weekly Report

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1. **WATERTALK**  
TECHNICAL ANALYSIS BY ROBIN BIEBER
  
  2. **NQH2O INDEX VS H2O FUTURES PRICE  
PERFORMANCE**
  
  3. **NQH2O INDEX HISTORY**
  
  4. **NQH2O INDEX AND H2O FUTURES VOLATILITY  
ANALYSIS**
  
  5. **CENTRAL VALLEY PRECIPITATION REPORT**
  
  6. **RESERVOIR STORAGE**
  
  7. **SNOWPACK WATER CONTENT**
  
  8. **CALIFORNIA DROUGHT MONITOR**
  
  9. **CLIMATE FORECAST**
  
  10. **WESTERN WEATHER DISCUSSION**
  
  11. **WATER NEWS**
    - I. CA WATER NEWS
    - II. US WATER NEWS
    - III. GLOBAL WATER NEWS
- 

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VelesWater



## WATER FUTURES MARKET ANALYSIS

Welcome to ***WATERTALK***

by Joshua Bell standing in for Robin Bieber

**CLICK THE LINK BELOW**

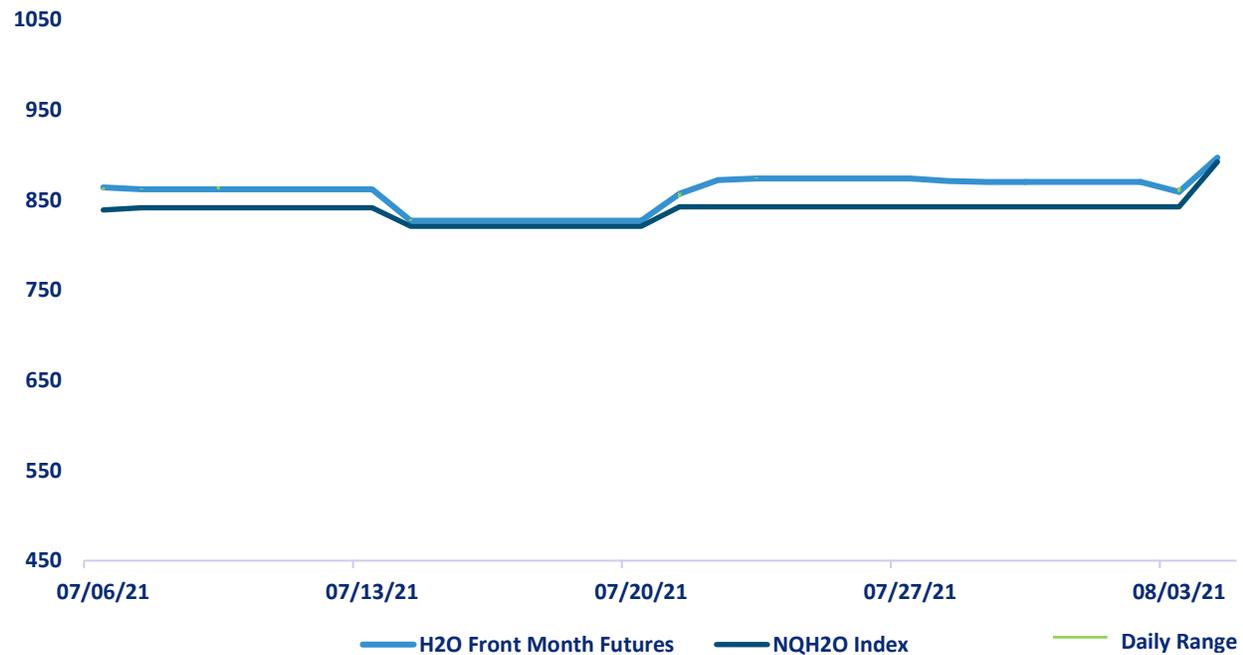
*"A 2 minute technical analysis video of H2O futures"*

<https://vimeo.com/583291836>



## NQH2O INDEX PRICE vs H2O FUTURES PRICE

### 1 Month Price Performance NQH2O Index vs H2O Futures



On the August 4<sup>th</sup> the NQH2O Index moved from \$842.38 up to a new high of \$892.33, a move of \$49.95 or 5.93%. The August Futures contract has been trading at a premium of \$16.62-\$27.62 all week until yesterday's where the premium to the index reduced to \$4.67. The high for the H2O futures contract over the past week was \$897 and the low for the week was \$859.

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

August is 895@900

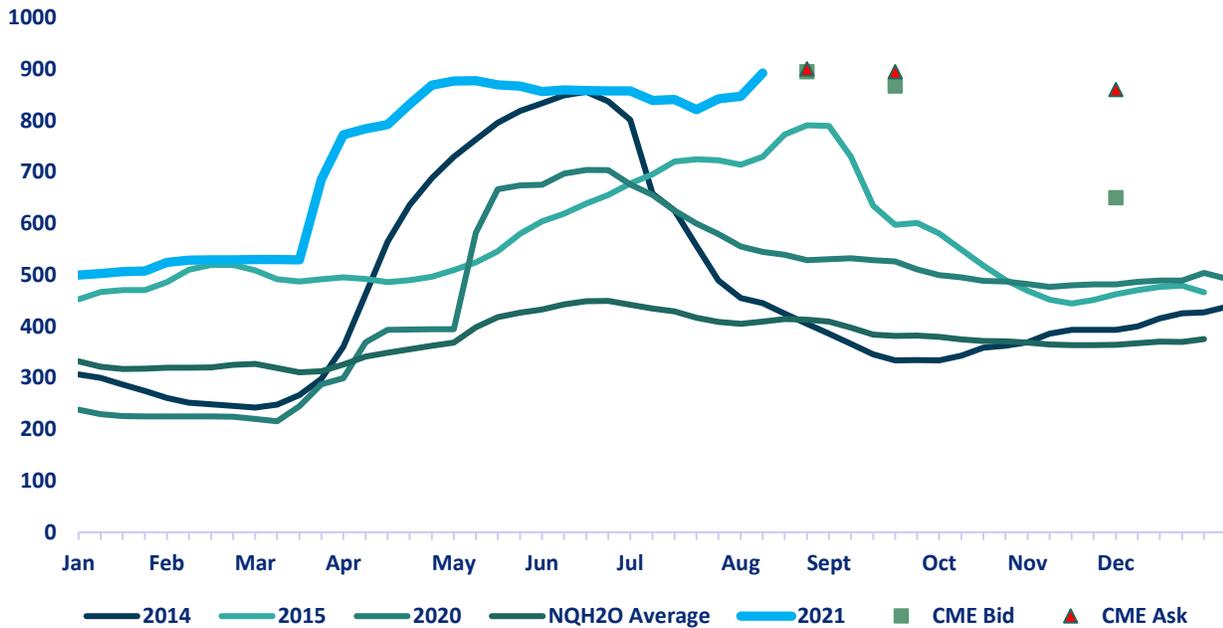
September 867@895

December 650@860

The December offer price is still cheaper than the August and September bids. The August bid to December offer is minus \$35. This is indicating a significant implied seasonality in the trading of water, with prices peaking in summer and tapering off in winter. NQH2O index is up 78.53% up Year to Date.



NQH2O Seasonal Pricing/ CME H2O Futures Quotes



The graph above lays out the Nasdaq Veles water index by year, showing 2014, 2015, 2020, 2021 plus an average price of the last eight years. In very dry years, prices clearly rise through the spring, peaking in May to July (with the exception of 2015) as demand for water from farmers peaks. Prices then taper off heading into the winter on reduced demand, and the possibility of rain/snow.

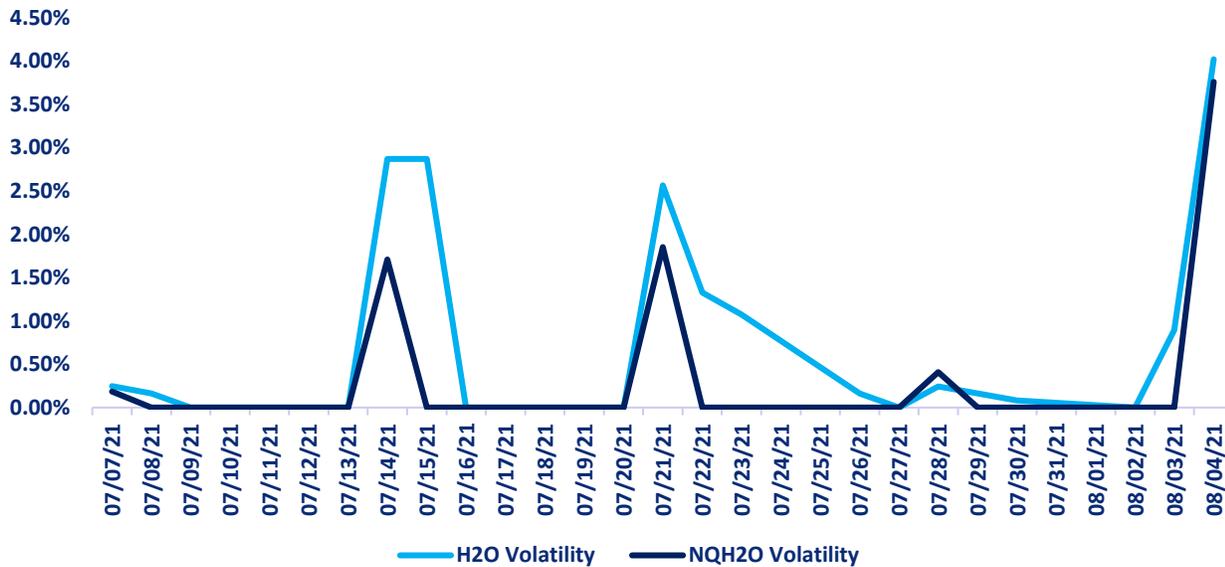
The restricted ability to “carry” water, much like one can do with financial contracts, gives this index the same type of seasonal pattern that one sees on some other commodities.

The graph for 2021 is highlighted in light blue. It shows the same seasonal climb, but at record-high values above each of the last eight years since February.

Current bids and offers in the market are still higher than historic prices showing that expectations are that this is an exceptionally dry year and prices may not fall seasonally as much as they have in prior dry years.



### Daily H2O Futures Volatility vs Daily NQH2O Index Volatility



ASSET	1 YEAR (%)	2 MONTH (%)	1 MONTH (%)	1 WEEK (%)
NQH2O INDEX	33.67%	6.44%	6.54%	4.738%
H2O FUTURES	N/A	10.38%	7.48%	4.48%

For the week ending on the 4<sup>th</sup> August the two-month futures volatility is at a premium of 3.51% to the index up 2.37% from the previous week. The one-month futures volatility is at a premium of 0.32% to the index, down 2.13% for the week. The one-week futures volatility is at a discount of 1.45% to the index, a reversal of 2.26%. This potentially indicates that the futures are predicting that the upward moves are running out of steam in the short term.

#### DAILY VOLATILITY

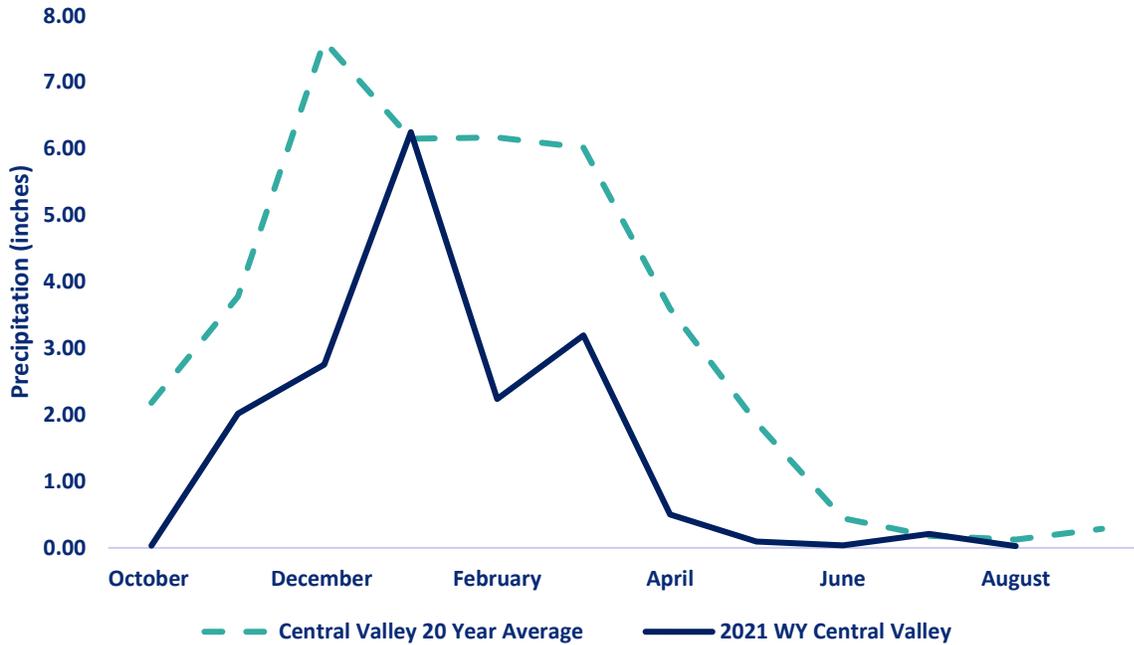
Over the last week the July future volatility high has been 4.02% on August 4<sup>th</sup> and the low has been 0% on August 2<sup>nd</sup>.

*Above prices are all **HISTORIC VOLATILITIES** and **IMPLIED VOLATILITIES** will be introduced once an options market has been established.*



# 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 28/07/2021

STATION	MTD (INCHES)	WEEK ON WEEK CHANGE (INCHES)	% OF 20 YEAR AVERAGE MTD	2021 WYTD VS 2020 WYTD %	2021 WY VS 20 YEAR AVERAGE TO DATE %
SAN JOAQUIN 5 STATION (5SI)	0.04	0.39	31.37%	62	48
TULARE 6 STATION (6SI)	0.03	0.05	28.85%	66	35
NORTHERN SIERRA 8 STATION (8SI)	0.01	0.05	7.02%	63	46
CENTRAL VALLEY TOTAL	0.08	0.49	22.41%	64	43

## RESERVOIR STORAGE

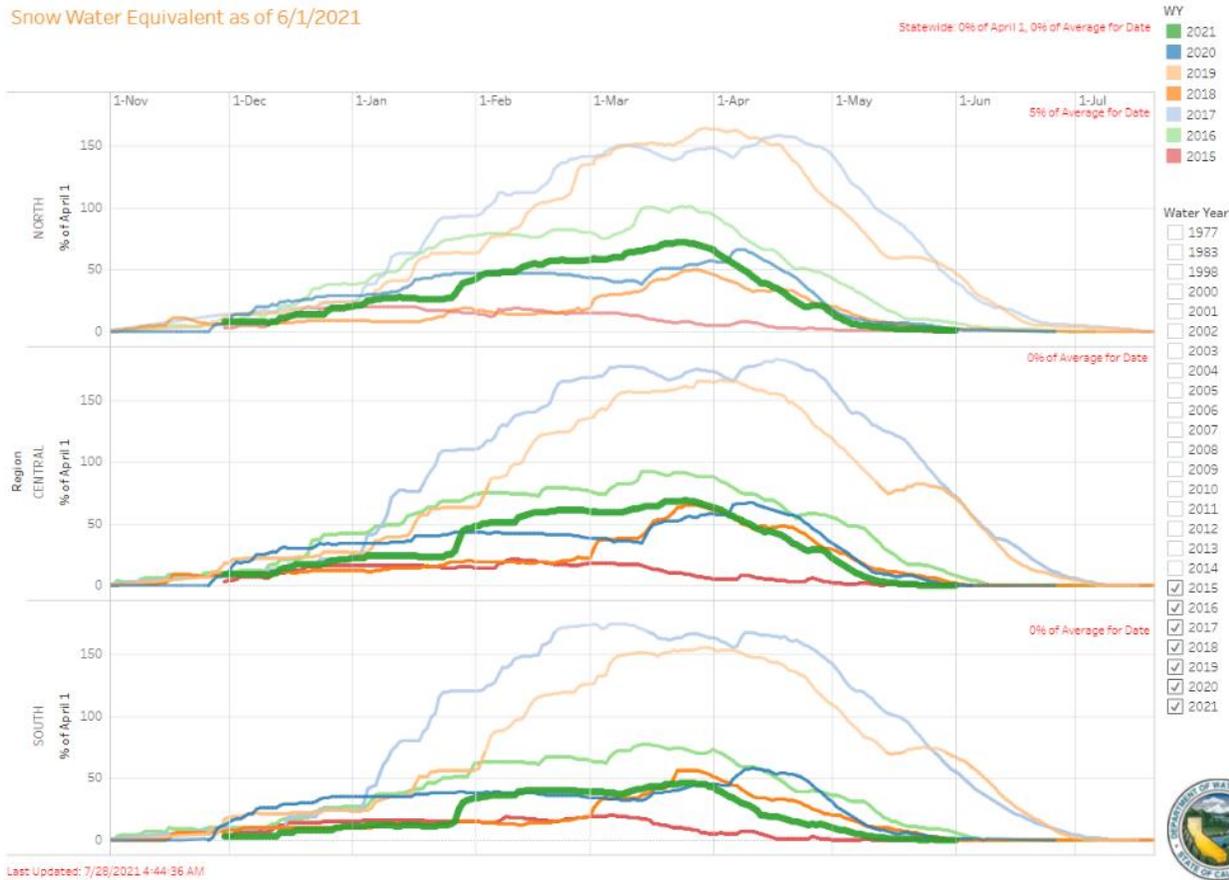
RESERVOIR	STORAGE (AF)	% CAPACITY	LAST YEAR % CAPACITY	HISTORIC ANNUAL AVERAGE CAPACITY %
TRINITY LAKE	992,348	41	66	51
SHASTA LAKE	1,432,604	31	58	45
LAKE OROVILLE	889,291	25	53	35
SAN LUIS RES	407,054	20	47	41

# VELES WATER WEEKLY REPORT

## SNOWPACK WATER CONTENT



Snow Water Equivalent as of 6/1/2021



REGION	*SNOWPACK WATER EQUIVALENT (INCHES)	WEEK ON WEEK CHANGE %	% OF AVERAGE LAST YEAR	% OF 20 YEAR HISTORICAL AVERAGE	% OF HISTORICAL **APRIL 1ST BENCHMARK
NORTHERN SIERRA	0.2	0.00%	9	5	1
CENTRAL SIERRA	0	0.00%	3	0	0
SOUTHERN SIERRA	0	0.00%	3	0	0
STATEWIDE	0.1	0.00%	3	0	0

\*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 1<sup>st</sup> 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.

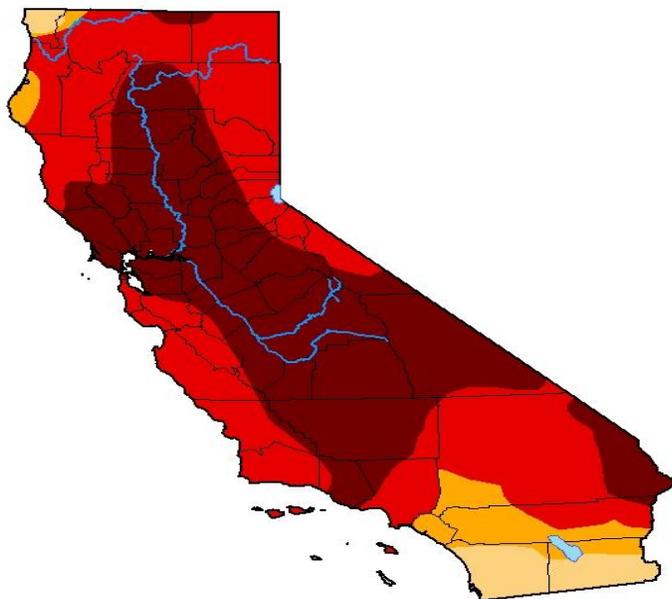
# VELES WATER WEEKLY REPORT

## DROUGHT MONITOR



### U.S. Drought Monitor California

**July 27, 2021**  
(Released Thursday, Jul. 29, 2021)  
Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	0.00	100.00	100.00	95.09	88.59	46.49
<b>Last Week</b> 07-20-2021	0.00	100.00	100.00	94.75	85.75	33.42
<b>3 Months Ago</b> 04-27-2021	0.00	100.00	97.51	87.95	52.86	5.36
<b>Start of Calendar Year</b> 12-29-2020	0.00	100.00	95.17	74.34	33.75	1.19
<b>Start of Water Year</b> 09-29-2020	15.35	84.65	67.65	35.62	12.74	0.00
<b>One Year Ago</b> 07-28-2020	40.34	59.66	50.38	21.50	3.04	0.00

**Intensity:**

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

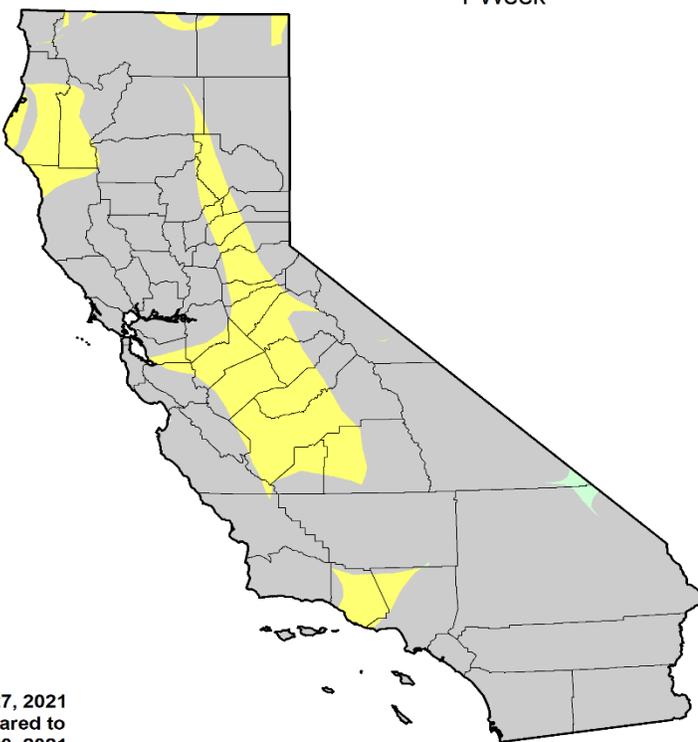
**Author:**

Brad Rippey  
U.S. Department of Agriculture



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

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



July 27, 2021  
compared to  
July 20, 2021



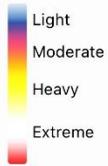
- 5 Class Degradation
- 4 Class Degradation
- 3 Class Degradation
- 2 Class Degradation
- 1 Class Degradation
- No Change
- 1 Class Improvement
- 2 Class Improvement
- 3 Class Improvement
- 4 Class Improvement
- 5 Class Improvement

[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

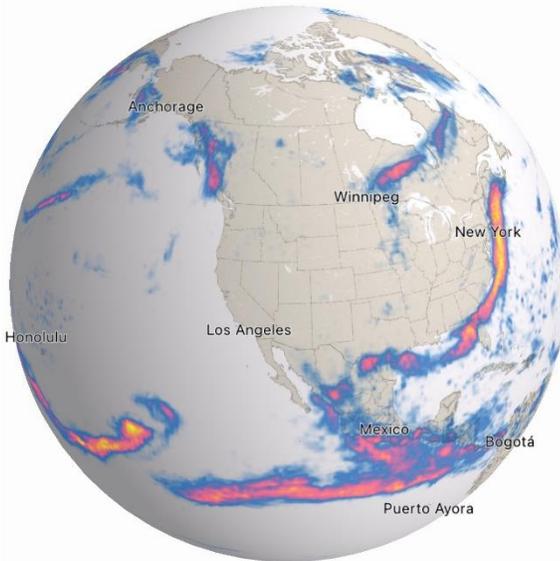


## CURRENT SATELLITE IMAGERY

The US Drought Monitor release their statistics with a 1-week lag to this report. Drought conditions in CA have changed significantly week on week. Exceptional Drought (D4)



levels increased by 13.07% from the previous week with most of that change happening within the Central Valley, CA main agricultural hub.



Over the past week the monsoon conditions that have been observed recently have moved West over the Sierra Mountain range delivering a small amount of precipitation. An important metric to note is that the Central Valley Precipitation Index finished up 117% of the historical average for the month of July. However this precipitation has done little for the drought conditions in the region.

Ref. Dark Sky

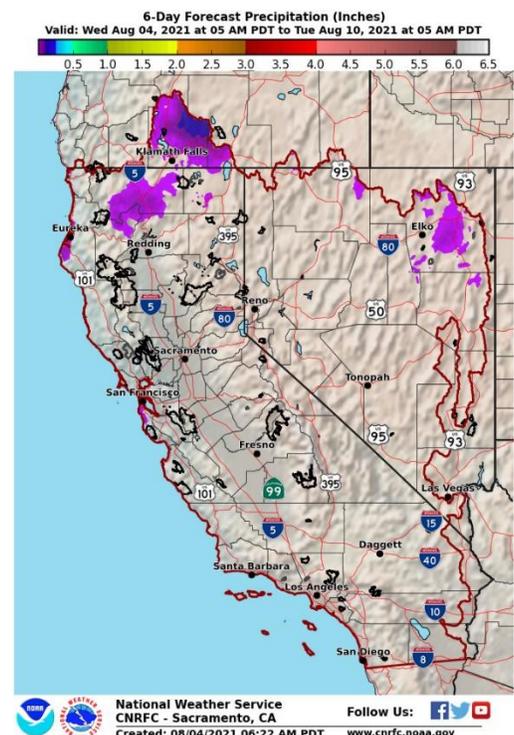
### 10 Day Outlook

High pressure aloft is centered over the Desert Southwest or near the CA/NV/AZ triple point. Offshore west of the SF Bay Area along 130W is a short-wave trough that is making its way toward the northeast. This feature will move across the CA/OR border area and bring the opportunity for some light precipitation while at the same time flatten the upper ridge. Generally dry westerly onshore flow will be the rule for the rest of the period with little if any precipitation expected into early next week.

Reference:

Hydrometeorological Discussion

National Weather Service / California Nevada RFC / Sacramento CA



National Weather Service  
 CNRFC - Sacramento, CA  
 Created: 08/04/2021 06:22 AM PDT  
 Follow Us: [Facebook icon] [Twitter icon] [YouTube icon]  
[www.cnrfc.noaa.gov](http://www.cnrfc.noaa.gov)



Further expansion of moderate to exceptional drought (D1 to D4) was introduced in parts of California and the Northwest, as agricultural, wildfire, and water-supply impacts continued to mount. Oregon's third-largest wildfire in modern history, the Bootleg Fire, has burned more than 410,000 acres of timber and brush, but was more than 50% contained. California's largest active blaze, the Dixie Fire, has scorched nearly 220,000 acres only about 15 miles northeast of the town of Paradise, which was devastated by the Camp Fire in 2018. Washington continued to lead the country in several drought-related agricultural categories, according to the U.S. Department of Agriculture, including topsoil moisture rated very short to short (99% on July 25), as well as very poor to poor ratings for rangeland and pastures (97%) and spring wheat (88%). In addition to Washington, at least two-thirds of the rangeland and pastures were rated very poor to poor on July 25 in Montana (91%), Arizona (82%), Oregon (80%), and Utah (69%). Montana rivaled Washington for agricultural drought severity, with topsoil moisture rated 97% very short to short and a nation-leading 70% of its barley rated very poor to poor. Farther south, however, an active monsoon circulation delivered drought relief in the form of diurnal showers and thunderstorms, some heavy. Up to one category of improvement was introduced in parts of Arizona, New Mexico, southwestern Colorado, and southern sections of Utah and Nevada. In Arizona, Tucson received more rain in 6 days (4.20 inches fell from July 20-25) than during all of 2020, when annual precipitation of 4.17 inches was the lowest on record. Despite the positive effect of monsoonal showers on surface conditions (e.g. improved vegetation health, topsoil moisture, and streamflow), serious long-term, underlying drought persisted, with obvious impacts on groundwater and reservoirs. The surface elevation of Lake Mead, on the Colorado River behind Hoover Dam, fell to a new record low—1,067.59 feet above sea level—on July 23. In Utah, the surface elevation of the Great Salt Lake fell below 4,191.4 feet in late July, breaking the previous record low set in 1963.

**Reference:**

Brad Rippey, U.S. Department of Agriculture

Richard Heim, NOAA/NCEI



## WATER NEWS

### CALIFORNIA WATER NEWS

#### **Drought Is Pushing More Saltwater Into The Sacramento-San Joaquin River Delta. California Built A Wall To Keep It Out.**

Drought conditions have prompted the building of a 750-foot wide rock barrier to prevent saltwater intrusion into the Sacramento-San Joaquin River Delta.

The California Department of Water Resources constructed the temporary barrier with 110,000 cubic yards of rock off West False River in Contra Costa County. Principal engineer Jacob McQuirk said that without the barrier, saltwater would endanger freshwater supplies in the Delta and water exports to the south.

“Every tidal cycle, that saltwater slowly propagates into the interior Delta,” he said. “Really, the beneficial uses of the interior Delta, they include agricultural supply, also interior municipal supplies.”

This is the second consecutive dry year for the state, with snowpack runoff being way less than expected.

McQuirk said 27 million people are dependent upon those water supplies and that the barrier will be taken down by November. However, if the drought continues into the following year, it may be reconstructed again.

“[If] it gets just too salty, we can’t export any water anymore,” McQuirk said. “Also, [it’s] not usable for those interior Delta municipalities.”

Original Article: [CAP Radio by Richard Ibarra](#)

#### **Bureau of Reclamation and the California Department of Water Resources Announces Updated Computer Models are Released for Key California Water Projects**

The Bureau of Reclamation and the California Department of Water Resources (DWR) have released the next versions of two computer models that simulate operations of the State Water Project (SWP) and the Central Valley Project (CVP). Water managers use the models – CalSim II and CalSim 3 – to examine project operations under various assumptions for hydrologic conditions, project facilities and regulatory requirements.

“Having the ability to model events in a virtual world is a tremendous help in drought planning and improving sustainability of our water resources,” said Erik Reyes, DWR’s



## VELES WATER WEEKLY REPORT

Supervising Engineer. “These highly complex and extensive models allow for studying a number of key changed conditions, including climate change.”

A beta version of CalSim 3 was originally released in 2017 for public comment. Since then several changes have been made to the model, including the full incorporation of the San Joaquin River, updated integration of groundwater and surface water interaction and new areas of simulation coverage in upstream watersheds. Both CalSim 3 and CalSim II, which are being updated from the last public release in October 2019, include refinements to the depiction of many regulatory criteria.

“The inclusion of enhanced physical modeling in CalSim 3, particularly the implementation of stream-groundwater interaction, represents a great stride forward in analytical capabilities for Central Valley Project and State Water Project planning studies,” stated Derya Sumer, Reclamation’s Water Supply and Operations Analysis Branch Chief.

These and other improvements enhance the ability to model the ever-changing conditions that dynamically affect the projects, including impacts to infrastructure, operating or regulatory criteria, land uses and climate change.

The models and preliminary documentation are available [here](#). Full documentation is expected to be made available in November 2021.

Original Article: [California Department of Water Resources by Erik Reyes](#)

### **Utilities are struggling to keep the lights on as fires, drought plague California**

The electric grid in the West is being tested like never before amid extreme-weather events, including raging wildfires and severe droughts fueled by climate change.

Utility companies are struggling to respond. Californians have had power cut preemptively when the risk of fire is high, while rolling blackouts have been implemented when supply is stretched thin.

There’s also the danger that aging and poorly maintained infrastructure poses. PG&E filed for bankruptcy after the company’s equipment sparked several wildfires in the past few years, including the 2018 Camp Fire blaze that killed more than 80 people and razed the town of Paradise, California.

“The amount of environmental pressures that are on utilities, given aging infrastructure, plus more wildfires and more hurricanes and more pressures like that, when there has been a systematic lack of investment in resiliency and reliability, it does catch up with you,” said Thomas Deitrich, CEO at Itron, which helps utilities manage and analyze



## VELES WATER WEEKLY REPORT

energy and water usage. “And that’s what you see in some cases, with certain utilities today.”

There are steps that utilities can take toward becoming resilient, including installing tech-enabled sensors for a more accurate snapshot of the conditions around power lines. Further, sophisticated forecasting can help utilities understand what their power needs will be down the line.

Original Article: [CNBC by Pippa Stevens](#)

### **Reclamation launches website for drought information**

On July 29, the U.S. Bureau of Reclamation launched a new web portal to provide real-time drought-related information and details of drought actions taken in the West. The science-based web portal is designed to increase public and media understanding of drought conditions and the all-of-government efforts to mitigate these conditions.

The features of the interactive multi-page platform highlight efforts to mitigate drought impacts, increase drought resiliency, reduce reliance on declining water sources and increase the efficiency of water deliveries. The portal is user friendly and provides easy-to-understand features, explanations and current information on cutting-edge science, drought actions, current conditions and climate change visualizations that will help the public understand the complex drought conditions in the West.

“We hope this tool will be a helpful resource for viewing real-time updates on drought conditions and learn more about what’s being done to combat this challenging drought situation,” said Deputy Commissioner Camille Calimlim Touton. “Users of this web portal will be able to explore data-driven mapping visualizations and delve into the new science and forecasting tools used to conduct water supply planning and optimization of water reservoir operations.”

The Department of the Interior is helping lead the Drought Relief Interagency Working Group, which is marshaling existing resources and working in partnership with state, local and Tribal governments to address the needs of communities suffering from drought-related impacts. The Working Group is actively working to identify and disburse immediate financial and technical assistance for impacted irrigators and Tribes. It is also developing longer-term measures to respond to climate change, including building more resilient communities and protecting the natural environment.

A series of online public briefings will be announced soon to introduce its major interactive features.

Original Article: [U.S. Bureau of Reclamation](#)



## **Does a state drought regulation threaten local water rights? MID, TID weigh in**

The Modesto and Turlock irrigation districts don't expect an impact this year from an emergency drought regulation that could stop farmers from diverting water from the state's major rivers.

But they are concerned about precedent-setting and whether a state agency's proposed drought orders will shrink the availability of water for Northern San Joaquin Valley farmers in 2022.

The State Water Resources Control Board was considering the extraordinary drought regulation at a meeting Tuesday in Sacramento that was expected to spur many hours of debate. The meeting was being held remotely due to COVID-19 restrictions.

"Our concerns are less about this year and more about the potential precedent of such a state action," said Michael Frantz, a TID board member.

The water districts and Valley political leaders have mobilized to urge the state water board to reconsider the emergency curtailments or amend the proposal.

Gov. Gavin Newsom's second drought proclamation, on May 10, directed the state water board to consider curtailment of water diversions because of the serious drought conditions and threat to California's water supply.

The SWRCB's executive director told the Sacramento Bee that regulators are trying to protect drinking water supplies and endangered fish in the Sacramento and San Joaquin river watersheds.

Many farmers in the San Joaquin Valley are already faced with drastic cuts to their contracts for water allocations from the Central Valley Project and State Water Project. In a joint statement last week, the MID and TID said it's unlikely the drought regulation will affect water deliveries the remainder of this year based on the understanding the state orders to stop diversions won't apply to water already diverted into storage. The two districts are owners of Don Pedro Reservoir.

District officials are concerned an order to stop diversions from the Tuolumne River could substantially reduce water supplies for agriculture in 2022 and beyond, depending on when the order is lifted.

Original Article: [The Modesto Bee by Ken Carlson](#)



## VELES WATER WEEKLY REPORT

### **As drought worsens, regulators impose unprecedented water restrictions on California farms**

Amid intensifying drought, state water regulators voted Tuesday to enact a drastic emergency order that will bar thousands of Californians — primarily farmers — from using stream and river water.

California's complex water rights system is designed to allocate water use during times of shortage and such curtailments, while rare, are not unheard of. But the scope of Tuesday's order — which will apply to thousands of senior water rights across a wide swath of the state — is unprecedented, officials said.

While the move has been protested by some farmers, irrigation districts and others, California Department of Food and Agriculture Secretary Karen Ross called the decision "a necessary step," saying the fact that senior water rights holders were included "speaks to the severity of the hydrology and what climate change has presented this year."

"It is a painful moment. We know the impacts are real," Ross said during Tuesday's meeting.

After several hours of public comments, the State Water Resources Control Board voted unanimously to pass the "emergency curtailment" order for the Sacramento-San Joaquin Delta watershed. The regulation will go into effect about two weeks from now, subject to approval by state Office of Administrative Law, with the issuing of formal curtailment orders to follow.

About 5,700 Northern California and Central Valley water rights holders — who collectively hold approximately 12,500 water rights — will be subject to the forthcoming curtailments, according to Erik Ekdahl, deputy director of the state water board's Division of Water Rights.

Original Article: [The LA Times by Julia Wick](#)

### **Growers in California's Key Delta Region Face Restrictions as Drought Worsens**

The historic Discover Delta Water Tower stands in a field along State Highway 12 near the eastern bank of the Sacramento River. Photo by Anne Wernikoff of Cal Matters

Suffering from drought, California is poised to ban thousands of farmers, landowners, and others from pumping water. Sacramento-San Joaquin Delta The movements said by the basins and irrigation districts are beyond the authority of the Water Supply Commission.



## VELES WATER WEEKLY REPORT

Urgent rules are such that state regulators have taken such widespread action during the drought, From Fresno to the Oregon border..

At a more than three-hour workshop to discuss the proposal on Tuesday, state water resources management officials said the situation in Delta was so severe that urgent action had to be taken. The board will vote for regulation next week, which could lead to a formal reduction order on August 16.

“We are not downplaying this behavior.” Irene SobeckThe Secretary-General of the Water Conservancy Committee said at a press conference last week. “We know that it will impose difficulties on people.”

During the last drought, in 2015, six irrigation districts servicing producers sued the state for efforts to prevent detours from the Delta.Judge of the High Court Judgment that state violates due process By failing to give them a “meaningful opportunity, including some form of hearing,” to challenge the board’s accreditation. Before They are ordered to reduce the use of water. “

This time, state officials said Tuesday’s virtual hearing Warning issued last monthSaid With the governor Drought Urgent Declaration They were “based on a very solid legal basis.”

Original Article: [California News Times](#)

### **Drought socks hydroelectricity, putting California in a power pinch**

The annual snapshot of California’s electricity generation shows how much drought conditions can affect the state’s power mix.

In-state hydroelectricity generation in 2020 dropped 44.3 percent from the year before, according to numbers recently released by the California Energy Commission. All told, 21,414 gigawatt-hours came from a combination of the state’s large and small hydro power plants — significantly lower than the 38,494 gigawatt-hours hydro delivered in 2019.

The state’s electricity from sources that do not emit carbon — renewables, nuclear power and large hydro projects of at 30 megawatts or more — accounted for 51 percent of generation within California last year, down 6 percent from 2019.

“The change is directly attributable to the significantly reduced hydroelectric generation ... as dry conditions returned to the state,” the energy commission explained in its breakdown of the numbers.



## VELES WATER WEEKLY REPORT

Hot, dry weather sucks up water levels at hydro facilities and reduces their electricity output. Conversely, when there's plenty of rain and snow runoff, hydro generation swells.

For example, the winter of 2016-2017 saw some parts of California reporting snowpack levels of more than 180 percent of normal. Months later, the energy commission reported large hydro made up 17.89 percent of in-state generation for the 2017 calendar year. When combined with small hydro that year, hydroelectricity accounted for more than one-fifth of California's electric generation.

But the drought's continuation has made conditions worse in 2021, as reservoirs around the state see water levels drop.

Original Article: [The San Diego Union Tribune by Rob Nikolewski](#)

### **California cuts off thousands of Valley farmers from river water as drought intensifies**

California regulators moved to cut off thousands of farmers from their main irrigation supplies Tuesday, voting to ban them from pulling water from the state's main rivers and streams as the drought worsens.

The State Water Resources Control Board, following hours of debate and comment, voted 5-0 to issue "emergency curtailment" orders covering the rivers of the Sacramento-San Joaquin Delta watershed — essentially the entire Central Valley.

It's the most dramatic step taken to date by state regulators since the drought was officially declared in most of California's counties — and surpasses any of the moves made during the previous drought.

"This is a terrible situation that we're all in," said board member Sean Maguire.

It's the latest blow to California agriculture and the state's \$50 billion-a-year farm economy. Already, most of the farmers who rely on the State Water Project or the federal government's Central Valley Project have had their allocations slashed to nothing or nearly nothing. The state board's order affects those with direct legal rights to divert water from the rivers.

The board said it needed to curtail farmers' usage to preserve river flows for drinking water as well as endangered fish species. Of particular importance, agency officials said, is the need to maintain flows in the rivers to keep saltwater from the Pacific from rushing into the Delta — the estuary through which much of California's water is pumped to the southern half of the state.

If that water gets too salty, pumping operations could have to stop. "Then we're in a very different emergency," said Dorene D'Adamo, vice chair of the board.



## VELES WATER WEEKLY REPORT

The decision is expected to become official in about two weeks, when it's cleared by the state Office of Administrative Law, and then the board will start issuing the actual curtailment orders.

Original Article: [Fresno Bee by Dale Kasler](#)

## US WATER NEWS

### **San Antonio built a pipeline to rural Central Texas to increase its water supply. Now local landowners say their wells are running dry.**

When the water finally arrived, San Antonio's leadership could relax. The roughly 150-mile long water pipeline to the northeast guaranteed the city's economic future and freed residents from the stress of droughts.

"We have water security for decades to come," said Robert Puente, president and CEO of the San Antonio Water System. Puente called the project, which came online in April 2020, the "biggest achievement in our lifetimes" to secure water for the city. The pipeline helped conserve the sensitive Edwards Aquifer, upon which San Antonio has historically depended for water.

But less than a year after the pipeline began to suck water from a different aquifer in Central Texas for delivery to 1.8 million people, some residents in that rural area turned on their taps only to be greeted by air.

"All so that the people in the city of San Antonio can water their lawns," said Bob Scouras, 72, a landowner in Lee County.

Out on County Road 411, Scouras and his wife, Leslie, 63, raised and later sold their horses, raised kids and sent them to college, built dozens of houses for birds, and are almost done building one for their family. They commuted to Austin until retirement, as did many of their neighbors. The community is mostly retirees who bought the lush farmland decades ago for cheap.

They live near the wells that pump water to San Antonio, and their own well started sputtering less than a year after the Vista Ridge project went online. The Scourases live in a small farmhouse on their 20 acres of property. It was supposed to be temporary while they built their permanent home, but that took a little longer than expected (more than a decade). The house is almost done, and they plan to move in within a few weeks. But now, they're not sure if they'll have enough water to live on the land much longer. "They didn't care that I would be out of drinking water — they would have green lawns," he said.



## VELES WATER WEEKLY REPORT

The situation underscores how important groundwater has become to Texas' water future as climate change brings more frequent droughts along with longer and hotter summers, at the same time as the state's population approaches 35 million. During the state's most recent severe drought in 2011, groundwater supplied almost two-thirds of the increase in water consumption.

"The growth that we've had [in Texas], water ultimately underpins at a very fundamental level," said Gabriel Collins, a Baker Botts fellow in energy and environmental regulatory affairs at Rice University.

A severe drought in the Western U.S. this year has forced some areas to halt development due to water constraints, while other regions are battling widespread wildfires. A 2019 study authored by National Oceanic and Atmospheric Administration scientists found that droughts are part of the spiral of climate change: High temperatures from global warming combined with low soil moisture to produce stronger heat waves.

Original Article: [Texas Tribune by Erin Douglas](#)

### **North Carolina awards \$153M for water and sewer improvement**

On July 30, North Carolina officials announced \$153 million in loans and grants to help pay for 48 drinking water and wastewater projects statewide.

"North Carolina families deserve clean water, and this funding will help communities tackle the challenge of aging water and wastewater systems to improve quality of life and increase good paying jobs," said Governor Cooper.

Notable projects in the latest funding round include:

Lumberton, in Robeson County, will receive a \$2,829,790 Clean Water State Revolving Fund loan for wastewater system improvements that include rehabilitation of three sewer pump stations, raising them above the 100-year flood plain.

Jamesville, in Martin County, will receive a \$1,847,934 Drinking Water State Revolving Fund loan, with \$500,00 in principal forgiveness, for an ongoing project replacing a 100,000 gallons per day water treatment plant.

Davie County will receive a \$6,926,193 Drinking Water State Revolving Fund loan (additional funding for an ongoing project expanding the Davie County Water Treatment Plant) and de-commissioning of the Mocksville Water Treatment Plant and installing interconnection from Davie County to Mocksville.



## VELES WATER WEEKLY REPORT

Burnsville, in Yancey County, will receive a \$1,337,350 Drinking Water State Revolving Fund loan, with \$334,337 in principal forgiveness, for an ongoing project upgrading their water treatment plant.

Grants for 15 local utilities through the Viable Utility Reserve to fund asset inventory and assessment studies.

A list of all projects funded statewide by town or county is available online. These projects are funded through the Drinking Water State Revolving Fund loan program, the Clean Water State Revolving Fund loan program and the Viable Utility Reserve.

“For rural communities especially, the costs of managing aging infrastructure can be extremely challenging. These projects will improve the viability, reliability and resiliency of these utilities, bringing benefits across the state,” said Department of Environmental Quality Secretary Elizabeth S. Biser.

As indicated in the funding award summary document, the amount of funding requested by North Carolina towns in this round alone, \$617.2 million, far exceeded the \$158.3 million in available funding for this round- strong evidence of the need for additional funding. Studies show that North Carolina needs from \$17 billion to \$26 billion in upgrades to its water and sewer infrastructure statewide.

Original Article: [Water World](#)

### **Is Utah using all the Colorado River water it’s entitled to? New state agency wants to find out**

The future of Utah’s relationship with the Colorado River began to take shape in downtown Salt Lake City on Friday, as the newly created Colorado River Authority of Utah held its first meeting.

The organization, created by the Utah Legislature during the 2021 session, was formed “to protect, conserve, and develop Utah’s Colorado River system interests,” according to the agency’s website. The agency, which is officially under Gov. Spencer Cox’s office, consists of six appointed members representing water interests from around the state. The agency comes into existence as one of the most severe droughts in recent memory grips the state. Almost 99% of the state is experiencing extreme drought.

Roughly 40 million people in seven states rely on water from the Colorado River. Utah, Colorado, Wyoming and New Mexico make up the Upper Basin States. Arizona, California and Nevada are the Lower Basin.

Each state gets a share of the water, known as the Colorado River Compact. The Upper Basin states get a percentage of the water that flows every year, while the Lower Basin



## VELES WATER WEEKLY REPORT

states are guaranteed a set amount. Based on the 1922 agreement, Utah receives 23% of the Upper Basin's share after the Lower Basin's share is met.

State officials and Republican lawmakers have long complained that Utah is not taking its full allocation from the river, which is delivering less water.

"The complexities of the river continue to increase. More and more people rely on the Colorado River, and it was obvious to legislators we needed to spend some additional resources," said Gene Shawcroft, general manager of the Central Utah Water Conservancy District, who was named chair of the new agency's board.

Lawmakers allocated nearly \$10 million dollars for the new agency. That includes \$600,000 of ongoing money to pay for three staff members and other expenses. There's also \$9 million in one-time money available along with an expected \$1.5 million annual "in-kind" contribution from the state's water authorities, which brings the total funding to just over \$11 million.

Original Article: [The Salt Lake Tribune by Bryan Schott](#)

## GLOBAL WATER NEWS

### Iran water: What's causing the shortages?

Protests in Iran against a range of grievances - including a severe lack of water and power blackouts - have drawn attention to the country's wider water problems.

Experts have raised concerns about the situation for many years, so what's to blame for Iran's water crisis?

In April, the Iranian Meteorological Organisation warned of an "unprecedented drought" and rainfall levels which were substantially below long-term averages.

In the oil-producing province of Khuzestan, residents took to the streets over water shortages, and there were protests against hydroelectric power cuts in other cities.

The government has responded with emergency assistance for the hardest-hit areas.

Iran faces a range of environmental challenges from high temperatures, pollution, flooding and vanishing lakes.

The amount of rainfall in Iran's main river basins between September 2020 and July 2021 was, in most places, substantially lower compared to the same period last year, according to data from the Ministry of Energy's website.

We haven't been able to access government figures for historical trends, but researchers in the United States have gathered data using satellite imagery.



## VELES WATER WEEKLY REPORT

This data compares rainfall up to March of this year against the 40-year average. The first three months of 2021 were all well below that average, according to the Center for Hydrometeorology at the University of California Irvine.

Original Article: [BBC News by Jack Goodman](#)

### **How the private sector is shaping the future of Lake Chad and the Congo Basin**

Lake Chad's declining water level has been on the political agenda of the Sahel region since the 1960s. The water is shared by Niger, Nigeria, Chad and Cameroon though it also affects communities in the larger regional spread of the basin that includes Libya, Algeria, Sudan and the Central African Republic. It's central to the livelihoods of over 30 million people.

One proposed solution for the shrinking resource was to divert water from the Congo River to Lake Chad via a 2,400km-long canal. The Lake Chad Basin Commission – representing Cameroon, Chad, Niger, Nigeria, Algeria, the Central African Republic, Libya, and Sudan – chose this option in 2018. It's estimated to cost around US\$50 billion. The Transaqua Project remains in the planning and feasibility study stage.

It's not without opposition. French scientists and the Democratic Republic of Congo, whose basin water would have to be diverted, have been firmly opposed to it.

We've studied the way that various actors in the project have formed coalitions to promote or block it, and what their motivations are. Interested parties include governments, international organisations, NGOs and scientific experts. We also looked at their tactics, such as the way they set agendas, construct knowledge, link issues and exclude others from negotiations.

Our analysis of what has been said, documented and reported about the project highlights how non-state actors – particularly private companies – have shaped the way water resources are controlled. Our recent synthesis highlights that is relevant for many states in the region.

Original Article: [The Conversation by Nidhi Nagabhatla, United Nations University, Ramazan Caner Sayan, Cranfield University](#)

### **Brazil's Water Crisis Adds to the World's Supply-Chain Misery**

Drought is making one of Brazil's most important river systems unnavigable, making it more challenging and costly for the commodities powerhouse to get grains and iron ore out to global markets.



## VELES WATER WEEKLY REPORT

The Parana River Basin in central Brazil is experiencing its worst water crisis in 91 years, according to the national grid operator, with June flows at 55% of the historical average for the month to sink to the lowest on record. South America's second-largest river system provides electricity and water to Brazil's industrialized south and supports river levels in neighboring countries, where drought has also made navigation difficult.

The consequences of Brazil's water woes stretch well beyond the borders of this Latin American nation, with receding waterways causing supply-chain disruptions and bottlenecks in Argentina, the world's largest soy-meal shipper, and Paraguay. Brazil is the top exporter of soybeans, coffee and sugar and the second biggest supplier of corn and iron ore.

The Tiete-Parana sub basin, which transports grains and oilseeds from Brazil's top crop belt to export terminals, is close to halting operations for the first time since the last severe drought in 2014, Luizio Rizzo Rocha, vice president of the National Federation of Waterway Navigation Companies, said in an interview. Water levels in a key stretch of the waterway known as Avandava have slipped just below the minimum required for navigation, he said in an interview.

Below-average rainfall has created bottlenecks for the second year in a row at the Paraguay-Parana waterway, which is used by iron-ore giant Vale SA as a cheaper transport alternative to roads and rail. Shipments are at the lowest since Brazil's waterway transportation agency, known as Antaq, began collecting data in 2010.

"The Paraguay-Parana waterway is also at risk of a navigation halt," said Jose Renato Ribas Fialho, Antaq's superintendent of performance, development and sustainability. "Barges are already carrying at lower capacity than a year ago, increasing transport time and costs."

Original Article: [Bloomberg by Fabiana Batista and Mariana Durao](#)

### **Market design can help solve global water scarcity. Here's how**

In 2010, the US faced a challenging allocation problem. Demand was surging for a resource vital to daily life, but the available supply was being used by incumbents that had built an important industry around it. Moreover, incremental transfers to new uses were impossible. Could new rules alleviate growing scarcities while respecting existing users' rights and enable a voluntary, multi-party reallocation?

The resource was not water but radio spectrum – the electromagnetic frequencies used for wireless phone calls, smartphone data, and emergency communications. Demand



## VELES WATER WEEKLY REPORT

for spectrum had grown as more people streamed movies, placed video calls, and used mobile apps. But because spectrum that would have been ideal for smartphone apps was taken up by a fragmented industry of TV broadcasters, there wasn't enough bandwidth for mobile uses.

Our company, Auctionomics, advised the US Congress and Federal Communications Commission to solve the problem through a series of changes culminating in the Broadcast Incentive Auction. Spectrum would be bought back from less-valuable broadcast uses and resold for cellular applications, while generously protecting incumbents who wanted to continue their traditional uses. That auction, held in 2016 and 2017, acquired a large amount of spectrum, reallocated it to higher-value uses, and raised \$19 billion in gross revenue.

The success of this initiative demonstrates the power and potential of market design to create and refine marketplaces and exchanges to improve the allocation of scarce resources. The auction design was integrated with important legislative changes that made spectrum rights more easily exchangeable while allowing incumbents to continue operating with little or no disruption.

This approach is widely applicable, especially in environmental management. Additional new scarcities will require a reallocation of resources that pays close attention to both social and environmental challenges and the interests of existing users, who will resist changes they deem harmful.

Market design, which has emerged as an important subfield of economics in the past 25 years, provides new economic theory and related algorithms, evidence, and examples to help policymakers implement effective solutions.—Paul Milgrom and Silvia Console Battilana.

Market design methods have already solved several important everyday problems of matching resources to users. Applications include internet advertising (seeing online ads that are appropriate and match your interests), organ transplantation (finding a compatible donor for a loved one), medical residency matching (connecting newly minted doctors their first job), and charitable food donations (stocking the local food bank with the most-needed items).

Policymakers can adapt the same theory and practices for new and evolving allocation problems. For example, market design can help address COVID-19 vaccine shortages by allowing exchanges of the ingredients and supplies (such as filters, tubing, and pharma bags) needed for vaccine production.



## VELES WATER WEEKLY REPORT

Likewise, financial instruments using cryptocurrencies have introduced decentralized designs with fully automated trading. Spectrum-license auctions will need to change again to accommodate 5G technologies and support small-scale internet-of-things and artificial intelligence applications. The success of cap-and-trade programmes – for carbon dioxide emissions, fisheries, and other environmental goods – will depend on how well regulators can define the products to be exchanged and set rules that encourage participation while achieving societal objectives.

Market design will also play a critical role in solving the problem of water allocation. Many of the world's existing rights to freshwater – both surface water and groundwater – have already been granted and grandfathered in complex ways to cities, farmers, and industrial users. In some cases, each individual trade of these rights requires governmental approval; other jurisdictions prohibit such trading entirely.

These restrictions and historical rules have led to highly inefficient allocations. Water may be unavailable to towns that require more of it as they grow, even when those urban and residential uses are a hundred times more valuable than the rural ones they would supplant. Certain industrial firms whose rights are based on historical use may have an incentive to overuse water, even during droughts, to retain their rights to future allotments. Where trading of rights is limited or prohibited, poor price signals make it difficult even to assess which uses are most valuable. And water demand will increase and shift as climate change continues to upend historical usage patterns. water, health, environment

Original Article: [World Economic Forum by Paul Milgrom, Professor of Humanities and Sciences, co-founder and Chairman of Auctionomics, Stanford Graduate School of Business & Silvia Console Battilana, Co-founder and Chief Executive Officer of Auctionomics, Stanford University](#)

### **NSW exceeds Barwon-Darling water allocations in first year of compliance after regime overhaul**

New South Wales has been found to have exceeded its water allocations for 2019-20 in the Barwon-Darling catchment, one of the main cotton-growing areas of the state, raising new questions about the effectiveness of the state's water enforcement rules.

The Barwon-Darling is the main tributary for the Darling and was the focus of the 2017 Four Corners report which raised allegations of water theft, pumps being tampered with and water users taking more than their allocations.



## VELES WATER WEEKLY REPORT

It led to a number of reports, prosecutions and an overhaul by NSW of its compliance regime.

But in the first year of compliance reporting, the Murray-Darling Basin Authority found NSW had exceeded what are known as the sustainable diversion limits (SDLs) in three areas – the Barwon-Darling watercourse, the Upper Macquarie alluvium and the Lower Murrumbidgee deep groundwater catchments.

The state claimed there was a “reasonable excuse” for exceeding the limits, and that it was adhering to its draft water resource plans for all three.

The MDBA accepted that as a reasonable and valid explanation for two of the areas, but not for the Barwon Darling.

“The MDBA found that NSW did not operate in a manner fully consistent with the submitted water resource plan in the 2019–20 water year for the Barwon–Darling,” the report said.

All other states were found to be compliant.

Original Article: [The Guardian by Anne Davis](#)

### **Spanish engineers extract drinking water from thin air**

A Spanish company has devised a system to extract drinking water from thin air to supply arid regions where people are in desperate need.

"The goal is to help people," said Enrique Veiga, the 82-year-old engineer who invented the machine during a harsh drought in southern Spain in the 1990s. "The goal is to get to places like refugee camps that don't have drinking water."

The devices made by his company, Aquaer, are already delivering clean, safe water to communities in Namibia and a Lebanese refugee camp.

"In the villages we visited in Namibia, they were astonished, they didn't understand, asking where the water came from," he said.

A small machine can produce 50-75 litres a day, and be easily carried on a trolley, but bigger versions can produce up to 5,000 litres a day.

"Our idea is not only to make a device that is effective, but also to make it useful for people who have to walk for miles to fetch water or make wells," Veiga explained.

Original Article: [Reuters by Mariano Valladolid and Jon Nazca](#)



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