

California Drought Update

8/17/21





April 2011

Enterprise Bridge location of Lake Oroville, CA

These images clearly show the severity of
our current Drought in California

Lake Oroville is shrinking as the [#drought](#) emergency worsens in [#California](#). In three months the lake has dropped from 42% of capacity on April 27, 2021 to 28% today, July 22, 2021. Water levels are 243 feet below full pool of 900.

The water is so low the California Department of Water Resources (DWR) says the powerplant will go offline in August for the first time ever. Neighbors worry it creates a perfect storm, meeting the peak of wildfire season and summer heat, and an anticipated power crunch.

<https://sanfrancisco.cbslocal.com/2021/07/23/californias-drought-drying-up-lake-oroville-shutting-down-power-plant-at-wildfire-season-peak/>



April 27, 2021



July 22, 2021

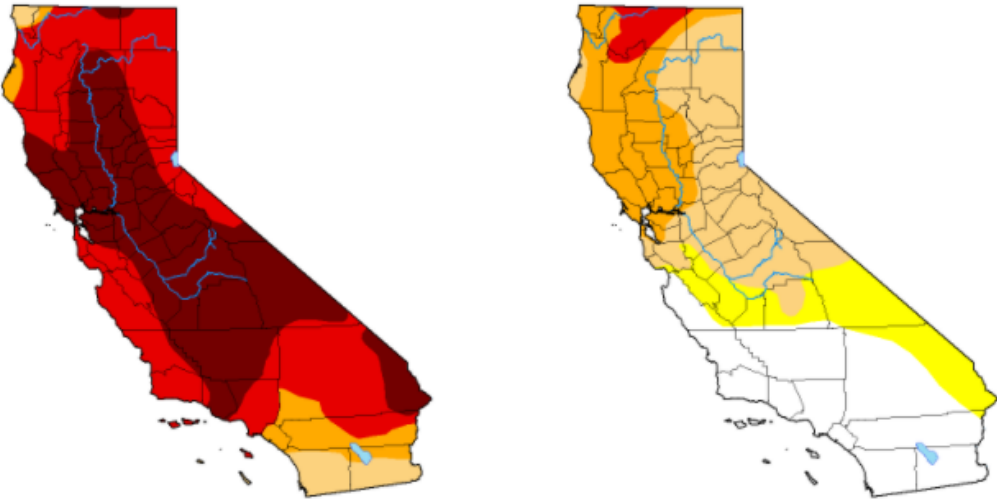
The entire Western U.S. is suffering through what most climatologists are calling a “Mega-Drought”

Current conditions vs. 1 year ago – as of 8/10/21

Drought Classification

- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)

- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data



< August 10, 2021 >



< August 11, 2020 >



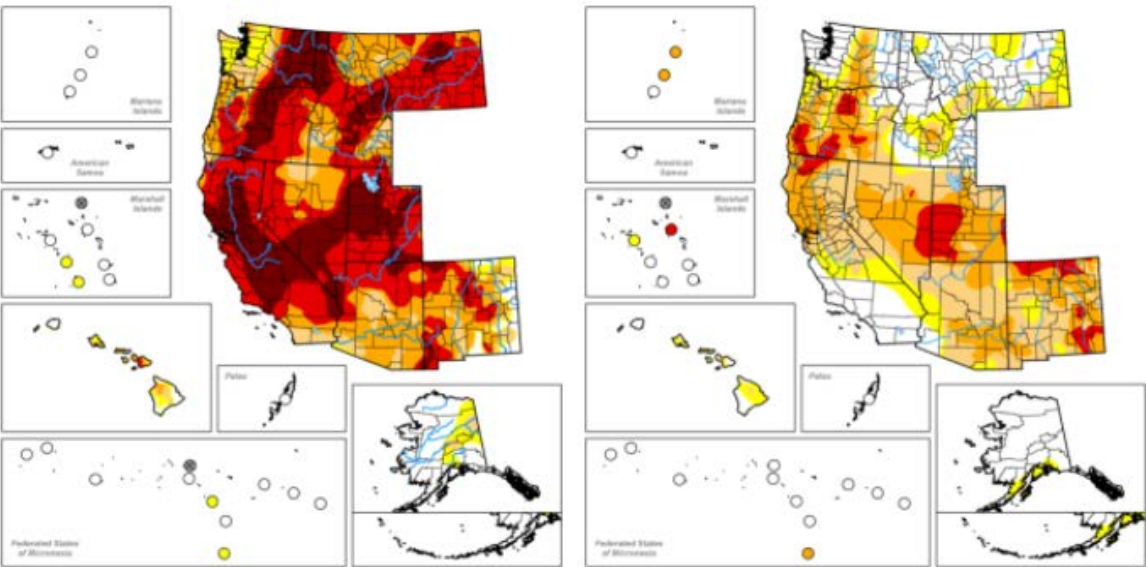
Statistics Comparison

Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4	DSCI
2021-08-10	0.00	100.00	100.00	95.07	88.37	47.10	431
2020-08-11	33.74	66.26	50.39	21.72	3.04	0.00	141
Change	33.74	-33.74	-49.61	-73.35	-85.33	-47.10	-290

Drought Classification

- None
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- No Data



< August 10, 2021 >



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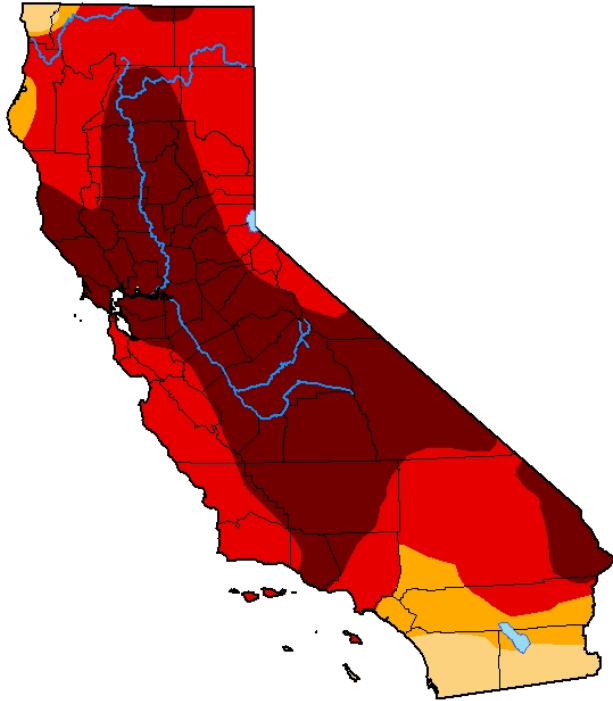


Statistics Comparison

Week	None	D0-D4	D1-D4	D2-D4	D3-D4	D4	DSCI
2021-08-10	30.80	69.20	61.86	55.08	40.25	15.86	242
2020-08-11	51.13	48.87	37.40	19.10	4.38	0.00	110
Change	20.33	-20.33	-24.46	-35.98	-35.87	-15.86	-132

Drought Conditions: August 2021 vs. August 2014

U.S. Drought Monitor California



August 10, 2021
(Released Thursday, Aug. 12, 2021)
Valid 8 a.m. EDT

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	95.07	88.37	47.10
Last Week 08-03-2021	0.00	100.00	100.00	95.07	88.37	46.45
3 Months Ago 05-11-2021	0.00	100.00	100.00	94.31	73.33	13.53
Start of Calendar Year 12-29-2020	0.00	100.00	95.17	74.34	33.75	1.19
Start of Water Year 09-29-2020	15.35	84.65	67.65	35.62	12.74	0.00
One Year Ago 08-11-2020	33.74	66.26	50.39	21.72	3.04	0.00

Intensity:

None	D2 Severe Drought
D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate 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>

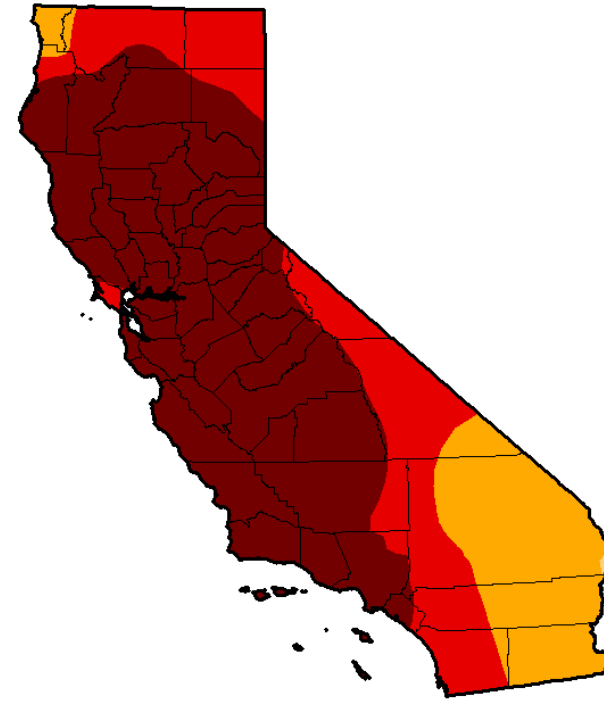
Author:

Richard Tinker
CPC/NOAA/NWS/NCEP



droughtmonitor.unl.edu

U.S. Drought Monitor California



August 12, 2014
(Released Thursday, Aug. 14, 2014)
Valid 8 a.m. EDT

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	99.80	81.92	58.41
Last Week 8/5/2014	0.00	100.00	100.00	99.80	81.92	58.41
3 Months Ago 5/13/2014	0.00	100.00	100.00	100.00	76.68	24.77
Start of Calendar Year 12/01/2013	2.61	97.39	94.25	87.53	27.59	0.00
Start of Water Year 10/1/2013	2.63	97.37	95.95	84.12	11.36	0.00
One Year Ago 8/13/2013	0.00	100.00	98.23	93.86	11.36	0.00

Intensity:

D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought
D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Richard Tinker
CPC/NOAA/NWS/NCEP

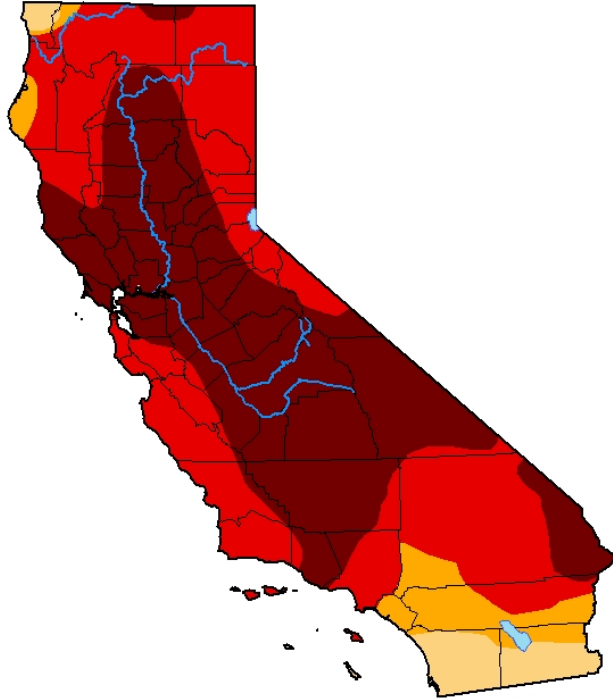


<http://droughtmonitor.unl.edu/>

As of August 10th, 2021, the % of California that is in Extreme drought category (D3-D4) is higher than seen at the end of July of 2014 (88.37% vs. 81.92%). Although the % of California land in the Exceptional Drought category (D4) is lower now than at this same time in 2014 (47.1% vs. 59.41%), the area that is under Exceptional Drought covers the entire Almond growing area of the state as was the case in 2014.

Drought Conditions: August 2021 vs. August 2015

U.S. Drought Monitor California



August 10, 2021
(Released Thursday, Aug. 12, 2021)
Valid 8 a.m. EDT

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	100.00	95.07	88.37	47.10
Last Week 08-03-2021	0.00	100.00	100.00	95.07	88.37	46.45
3 Months Ago 05-11-2021	0.00	100.00	100.00	94.31	73.33	13.53
Start of Calendar Year 12-29-2020	0.00	100.00	95.17	74.34	33.75	1.19
Start of Water Year 09-29-2020	15.35	84.65	67.65	35.62	12.74	0.00
One Year Ago 08-11-2020	33.74	66.26	50.39	21.72	3.04	0.00

Intensity:

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

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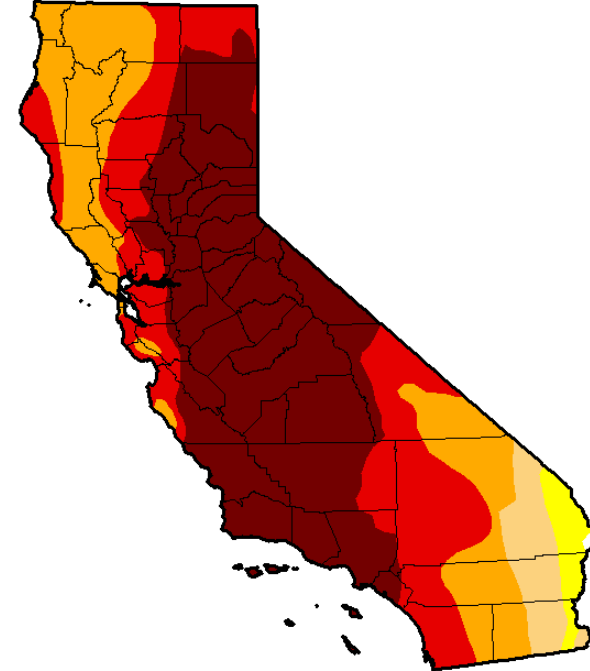
Author:

Richard Tinker
CPC/NOAA/NWS/NCEP



droughtmonitor.unl.edu

U.S. Drought Monitor California



August 11, 2015
(Released Thursday, Aug. 13, 2015)
Valid 8 a.m. EDT

	Drought Conditions (Percent Area)					
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.14	99.86	97.35	92.36	71.08	46.00
Last Week 8/4/2015	0.14	99.86	97.35	94.59	71.08	46.00
3 Months Ago 5/12/2015	0.14	99.86	98.28	93.91	66.60	46.77
Start of Calendar Year 12/2/2014	0.00	100.00	98.12	94.34	77.94	32.21
Start of Water Year 9/20/2014	0.00	100.00	100.00	95.04	81.92	58.41
One Year Ago 8/12/2014	0.00	100.00	100.00	99.80	81.92	58.41

Intensity:

D0 Abnormally Dry	D3 Extreme Drought
D1 Moderate Drought	D4 Exceptional Drought
D2 Severe Drought	

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

Author:

Brian Fuchs
National Drought Mitigation Center



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

As of August 10th, 2021, the % of California that is in Extreme drought category (D3-D4) is higher than seen at the end of July of 2015 (88.37% vs. 71.08%). The % of California land in the Exceptional Drought category (D4) is also higher now than at this same time in 2015 (47.1% vs. 46.0%).

The combined storage for these major California Reservoirs is now at 32% of total capacity.

[illegible]

Reservoir	Total Capacity	% of Capacity as of August158th									Storage level in Millions of acre feet as of August 15th								
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2013	2014	2015	2016	2017	2018	2019	2020	2021
Shasta	4.552	50%	32%	41%	73%	83%	64%	84%	55%	29%	2.276	1.457	1.866	3.323	3.778	2.913	3.824	2.504	1.320
Trinity	2.448	61%	32%	31%	45%	80%	66%	88%	64%	38%	1.493	0.783	0.759	1.102	1.958	1.616	2.154	1.567	0.930
Oroville	3.538	55%	33%	31%	58%	54%	50%	81%	50%	23%	1.946	1.168	1.097	2.052	1.911	1.769	2.866	1.769	0.814
New Melones	2.420	47%	24%	13%	23%	87%	77%	87%	67%	40%	1.137	0.581	0.315	0.557	2.105	1.863	2.105	1.621	0.968
Folsom	0.977	49%	40%	24%	39%	85%	56%	82%	52%	24%	0.479	0.391	0.234	0.381	0.830	0.547	0.801	0.508	0.234
San Luis	2.039	17%	20%	22%	11%	92%	45%	62%	45%	16%	0.347	0.408	0.449	0.224	1.876	0.918	1.264	0.918	0.326
Don Pedro	2.030	59%	42%	33%	70%	94%	81%	94%	74%	54%	1.198	0.853	0.670	1.421	1.908	1.644	1.908	1.502	1.096
Millerton	0.520	60%	48%	33%	56%	89%	58%	86%	44%	43%	0.312	0.250	0.172	0.291	0.463	0.302	0.447	0.229	0.224
Exchequer	1.025	39%	18%	10%	47%	90%	72%	90%	52%	27%	0.400	0.185	0.103	0.482	0.923	0.738	0.923	0.533	0.277
Pyramid	0.171	92%	93%	93%	94%	93%	92%	93%	93%	92%	0.157	0.159	0.159	0.161	0.159	0.157	0.159	0.159	0.157
Castaic	0.325	90%	45%	39%	76%	92%	88%	91%	93%	33%	0.293	0.146	0.127	0.247	0.299	0.286	0.296	0.302	0.107
Pine Flat	1.000	17%	12%	14%	25%	80%	35%	77%	26%	20%	0.170	0.120	0.140	0.250	0.800	0.350	0.770	0.260	0.200
Total:	21.045	49%	31%	29%	50%	81%	62%	83%	56%	32%	10.207	6.499	6.089	10.490	17.010	13.103	17.517	11.872	6.654
		1%	1%	1%	2%	2%	1%	2%	1%	1%	(0.244)	(0.210)	(0.215)	(0.416)	(0.453)	(0.293)	(0.508)	(0.272)	(0.241)
Snowpack as a % of Normal as of 6/1/21:		0%	0%	0%	23%	192%	7%	202%	3%	0%	Change vs. Pr Week								
Snowpack: Avg. snow water equivalent inches:		0.1	0.1	0.0	2.0	16.6	0.4	16.9	0.3	0.1									

= Lowest over the past 9 years

= CVP Reservoirs (San Luis is both CVP & DWR)

Current vs. Same Time Last Year:

(5.218) -44%

(4.945)	-23%
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= -3.00 M acre ft Decrease

vs. Last year in these key

Agricultural Supply Reservoirs.

	2013	2014	2015	2016	2017	2018	2019	2020	Current 2021	Current vs. YTD Normal: 49% LY vs. YTD Normal: 87%	
Federal Water Supply (CVP)											
North of Delta Ag	75%	0%	0%	100%	100%	100%	100%	50%	0%	Was Originally 5% but later reduced to 0%.	
North of Delta Exchange/Settlement Contractors	100%	75%	75%	100%	100%	100%	100%	100%	75%		
South of the Delta Ag	20%	0%	0%	5%	100%	50%	75%	20%	0%	Was Originally 5% but later reduced to 0%.	
South of the Delta Exchange/Settlement Contractors	100%	65%	75%	100%	100%	100%	100%	100%	75%		
Friant Class 1	62%	0%	0%	75%	100%	88%	100%	65%	20%		
Friant Class 2	0%	0%	0%	0%	0%	130K AF	0%	0%	0%		
State Water Allocation	35%	5%	20%	60%	85%	35%	75%	20%	5%		

Since June 2nd,2021 – the combined reservoir storage levels have dropped by -40% (3.32 million acre/feet).

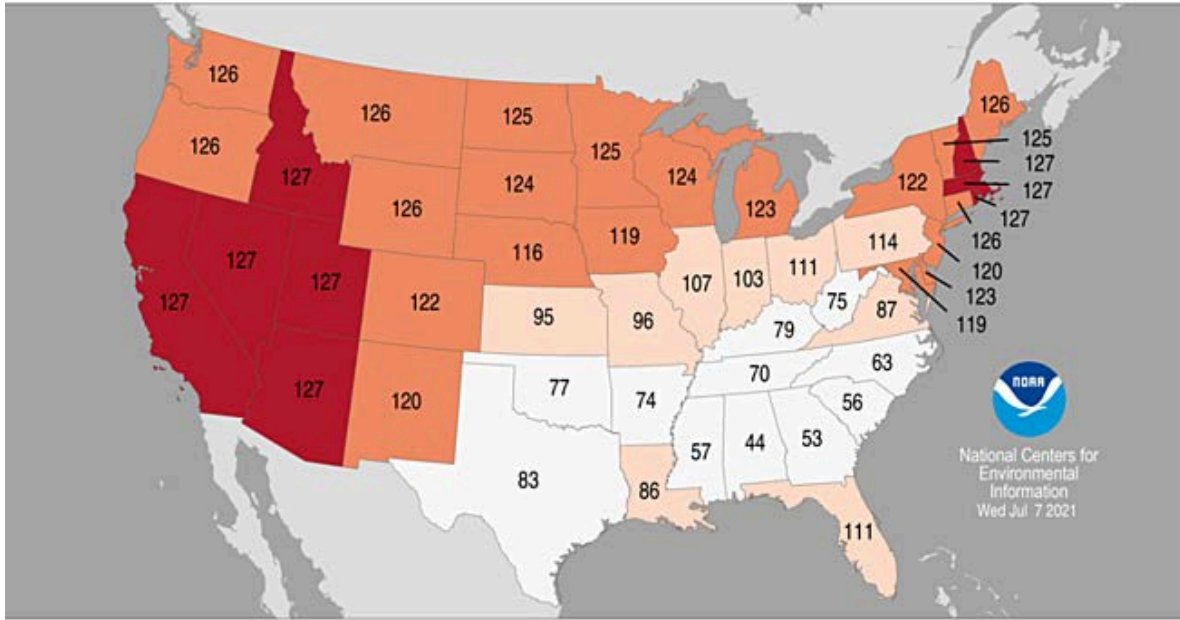
Major California Reservoir Storage- Weekly Capacity Level & Change vs. the Prior Week

Reservoir	Acre Feet of Storage in Millions														Cumulative
	6/2/21	6/8/21	6/13/21	6/20/21	6/27/21	7/5/21	7/11/21	7/18/21	7/25/21	8/1/21	8/8/21	8/15/21	8/22/21	8/29/21	Change
Shasta	1.957	1.912	1.866	1.821	1.775	1.684	1.639	1.593	1.502	1.457	1.366	1.320			
Trinity	1.248	1.224	1.224	1.200	1.175	1.126	1.102	1.077	1.028	1.004	0.955	0.930			
Orville	1.344	1.309	1.274	1.203	1.168	1.097	1.026	0.991	0.920	0.885	0.849	0.814			
New Melones	1.379	1.355	1.307	1.283	1.234	1.210	1.162	1.113	1.089	1.041	0.992	0.968			
Folsom	0.361	0.352	0.332	0.322	0.303	0.274	0.274	0.264	0.254	0.244	0.234	0.234			
San Luis	0.877	0.836	0.795	0.754	0.693	0.632	0.571	0.510	0.469	0.408	0.367	0.326			
Don Pedro	1.340	1.320	1.299	1.279	1.259	1.238	1.218	1.198	1.177	1.157	1.137	1.096			
Millerton	0.260	0.270	0.270	0.260	0.250	0.234	0.229	0.224	0.224	0.224	0.224	0.224			
Exchequer	0.441	0.431	0.431	0.410	0.400	0.379	0.369	0.349	0.328	0.308	0.297	0.277			
Pyramid	0.157	0.161	0.159	0.156	0.157	0.156	0.156	0.156	0.159	0.156	0.157	0.157			
Castaic	0.211	0.202	0.198	0.185	0.176	0.166	0.156	0.146	0.137	0.124	0.117	0.107			
Pine Flat	0.400	0.400	0.390	0.350	0.300	0.270	0.260	0.240	0.230	0.210	0.200	0.200			
Total:	9.977	9.770	9.546	9.222	8.889	8.466	8.160	7.859	7.517	7.215	6.895	6.654	0.000	0.000	
Shasta		-0.046	-0.046	-0.046	-0.046	-0.091	-0.046	-0.046	-0.091	-0.046	-0.091	-0.046			-0.637
Trinity		-0.024	0.000	-0.024	-0.024	-0.049	-0.024	-0.024	-0.049	-0.024	-0.049	-0.024			-0.318
Orville		-0.035	-0.035	-0.071	-0.035	-0.071	-0.071	-0.035	-0.071	-0.035	-0.035	-0.035			-0.531
New Melones		-0.024	-0.048	-0.024	-0.048	-0.024	-0.048	-0.048	-0.024	-0.048	-0.048	-0.024			-0.411
Folsom		-0.010	-0.020	-0.010	-0.020	-0.029	0.000	-0.010	-0.010	-0.010	-0.010	0.000			-0.127
San Luis		-0.041	-0.041	-0.041	-0.061	-0.061	-0.061	-0.061	-0.041	-0.061	-0.041	-0.041			-0.551
Don Pedro		-0.020	-0.020	-0.020	-0.020	-0.020	-0.020	-0.020	-0.020	-0.020	-0.020	-0.041			-0.244
Millerton		0.010	0.000	-0.010	-0.010	-0.016	-0.005	-0.005	0.000	0.000	0.000	0.000			-0.036
Exchequer		-0.010	0.000	-0.021	-0.010	-0.021	-0.010	-0.021	-0.021	-0.021	-0.010	-0.021			-0.164
Pyramid		0.003	-0.002	-0.003	0.002	-0.002	0.000	0.000	0.003	-0.003	0.002	0.000			0.000
Castaic		-0.010	-0.003	-0.013	-0.010	-0.010	-0.010	-0.010	-0.010	-0.013	-0.007	-0.010			-0.104
Pine Flat		0.000	-0.010	-0.040	-0.050	-0.030	-0.010	-0.020	-0.010	-0.020	-0.010	0.000			-0.200
Total:		-0.207	-0.225	-0.323	-0.333	-0.423	-0.306	-0.300	-0.343	-0.302	-0.320	-0.241			-3.323
Shasta		-2%	-2%	-2%	-3%	-5%	-3%	-3%	-6%	-3%	-6%	-3%			-39%
Trinity		-2%	0%	-2%	-2%	-4%	-2%	-2%	-5%	-2%	-5%	-3%			-29%
Orville		-3%	-3%	-6%	-3%	-6%	-6%	-3%	-7%	-4%	-4%	-4%			-49%
New Melones		-2%	-4%	-2%	-4%	-2%	-4%	-4%	-2%	-4%	-5%	-2%			-35%
Folsom		-3%	-6%	-3%	-6%	-10%	0%	-4%	-4%	-4%	-4%	0%			-42%
San Luis		-5%	-5%	-5%	-8%	-9%	-10%	-11%	-8%	-13%	-10%	-11%			-94%
Don Pedro		-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-2%	-4%			-20%
Millerton		4%	0%	-4%	-4%	-6%	-2%	-2%	0%	0%	0%	0%			-15%
Exchequer		-2%	0%	-5%	-2%	-5%	-3%	-6%	-6%	-6%	-3%	-7%			-45%
Pyramid		2%	-1%	-2%	1%	-1%	0%	0%	2%	-2%	1%	0%			0%
Castaic		-5%	-2%	-7%	-5%	-6%	-6%	-6%	-7%	-10%	-5%	-8%			-66%
Pine Flat		0%	-3%	-10%	-14%	-10%	-4%	-8%	-4%	-9%	-5%	0%			-66%
Total:		-2%	-2%	-3%	-4%	-5%	-4%	-4%	-4%	-4%	-4%	-3%			-40%

Both June & July 2021 were the Hottest on record going back 127 years. The 1st 12 days of August have continued this pattern.

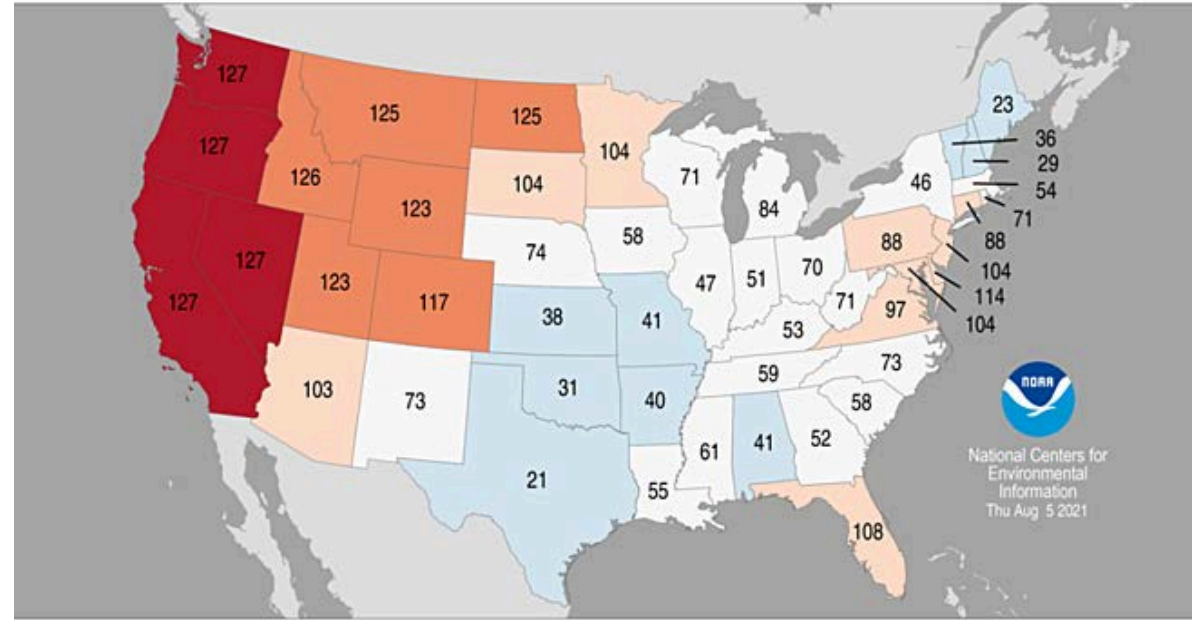
Statewide Average Temperature Ranks

June 2021
Period: 1895–2021



Statewide Average Temperature Ranks

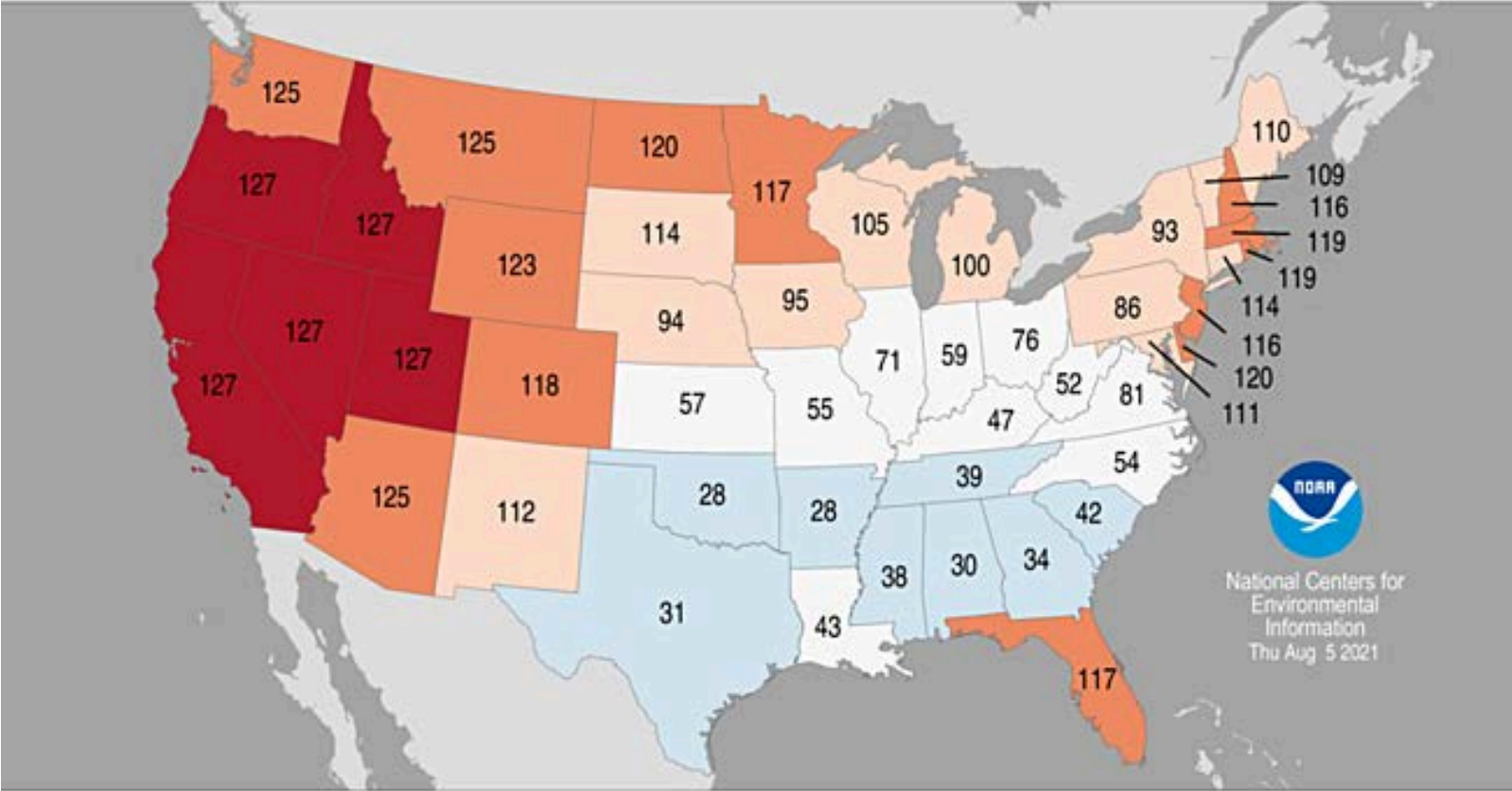
July 2021
Period: 1895–2021



In fact, the past 3 months (May – July) combined were the hottest on record for California. Considering these are the three key months for Almond Nut Development, it is no surprise why we are seeing much smaller nut size than expected and in comparison to last year.

Statewide Average Temperature Ranks

May – July 2021
Period: 1895–2021



Days 1-16 of August 2021 were hotter than seen during the 2014 & 2015 drought years.

Bakersfield				
August	Average Temperature F			# of Days
	Max	Avg	Min	100+ F

1st - 16th	101.9	89.3	76.9	13
vs. 2020	2.3	2.7	2.6	16
vs. 2014	4.1	2.8	2.4	10
vs. 2015	7.1	6.3	6.0	7

Fresno				
August	Average Temperature F			# of Days
	Max	Avg	Min	100+ F

1st - 16th	102.3	87.3	73.2	13
vs. 2020	2.7	1.6	1.9	17
vs. 2014	4.7	1.9	0.5	10
vs. 2015	7.6	6.1	5.6	7

Stockton				
August	Average Temperature F			# of Days
	Max	Avg	Min	100+ F

1st - 16th	94.1	76.6	61.3	0
vs. 2020	-3.6	-4.4	-4.2	9
vs. 2014	3.9	0.4	-2.2	1
vs. 2015	2.9	1.2	0.1	5

Sacramento Intl Airport				
August	Average Temperature F			# of Days
	Max	Avg	Min	100+ F

1st - 16th	96.1	76.6	61.6	4
vs. 2020	-0.3	-1.7	-1.8	6
vs. 2014	6.9	2.4	-0.4	1
vs. 2015	5.6	2.4	0.9	4

Red Font = 2021 Hotter Blue Font = 2021 Cooler

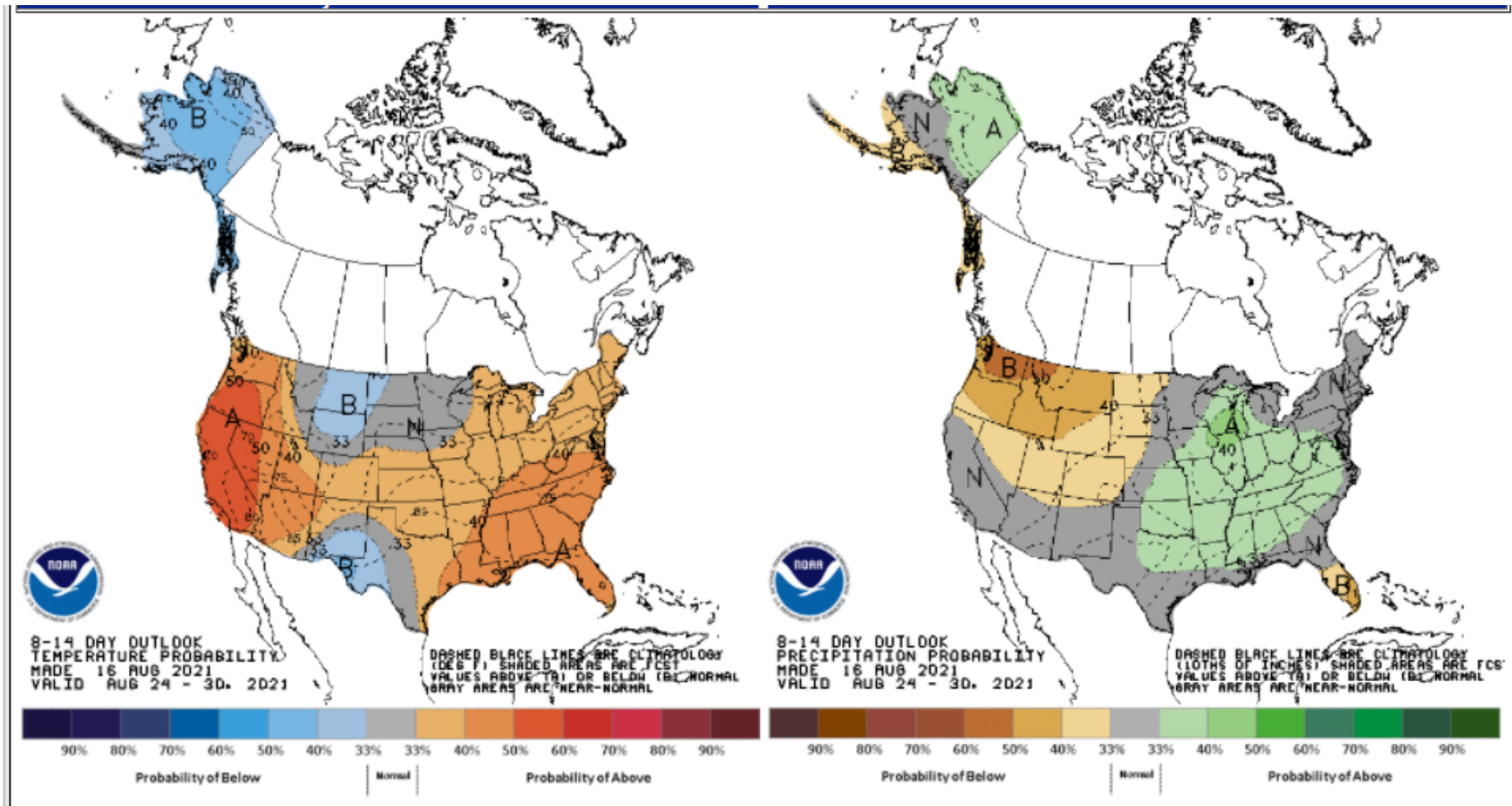
10 Day Weather - Bakersfield, CA				
As of 4:20 pm PDT				
Excessive Heat Warning				
Tonight	--/79°		Clear	1% NNW 10 mph
Tue 17	105°/71°		Sunny	1% WNW 13 mph
Wed 18	93°/68°		Sunny	1% NW 12 mph
Thu 19	94°/70°		Sunny	1% NW 10 mph
Fri 20	97°/71°		Sunny	1% NW 11 mph
Sat 21	96°/69°		Sunny	1% NW 12 mph
Sun 22	95°/69°		Sunny	1% NW 9 mph
Mon 23	97°/71°		Sunny	1% NW 10 mph
Tue 24	99°/72°		Sunny	1% WNW 10 mph
Wed 25	102°/74°		Sunny	1% WNW 10 mph
Thu 26	104°/76°		Sunny	1% WNW 10 mph
Fri 27	105°/77°		Sunny	1% WNW 10 mph
Sat 28	105°/77°		Sunny	1% WNW 10 mph
Sun 29	103°/75°		Sunny	1% WNW 11 mph
Mon 30	102°/73°		Sunny	1% WNW 10 mph

10 Day Weather - Fresno, CA				
As of 4:32 pm PDT				
Excessive Heat Warning				
Tonight	--/70°		Clear	1% NW 13 mph
Tue 17	103°/61°		Sunny	1% NW 10 mph
Wed 18	93°/62°		Sunny	1% WNW 8 mph
Thu 19	95°/64°		Sunny	1% NW 11 mph
Fri 20	98°/64°		Sunny	1% NW 9 mph
Sat 21	96°/62°		Sunny	1% NW 11 mph
Sun 22	95°/63°		Sunny	1% NW 9 mph
Mon 23	97°/64°		Sunny	1% NW 9 mph
Tue 24	99°/66°		Sunny	1% NW 9 mph
Wed 25	102°/68°		Sunny	1% NW 9 mph
Thu 26	104°/69°		Sunny	1% NW 9 mph
Fri 27	106°/71°		Sunny	1% NW 9 mph
Sat 28	105°/70°		Sunny	1% NW 9 mph
Sun 29	103°/69°		Sunny	1% NW 9 mph
Mon 30	102°/67°		Sunny	1% NW 9 mph

10 Day Weather - Stockton, CA				
As of 4:39 pm PDT				
Air Quality Alert				
Tonight	--/62°		Clear	4% W 13 mph
Tue 17	90°/58°		Sunny	3% W 13 mph
Wed 18	92°/59°		Sunny	2% NW 11 mph
Thu 19	90°/58°		Sunny	3% WNW 12 mph
Fri 20	92°/57°		Sunny	5% NW 12 mph
Sat 21	88°/56°		Sunny	5% WNW 11 mph
Sun 22	89°/56°		Sunny	5% NW 10 mph
Mon 23	91°/58°		Sunny	4% NW 10 mph
Tue 24	94°/60°		Sunny	3% NW 10 mph
Wed 25	97°/61°		Sunny	3% NW 10 mph
Thu 26	98°/63°		Sunny	2% NW 10 mph
Fri 27	99°/63°		Sunny	1% NW 10 mph
Sat 28	97°/62°		Sunny	1% NW 10 mph
Sun 29	96°/60°		Sunny	1% NW 10 mph
Mon 30	94°/58°		Sunny	2% NW 10 mph

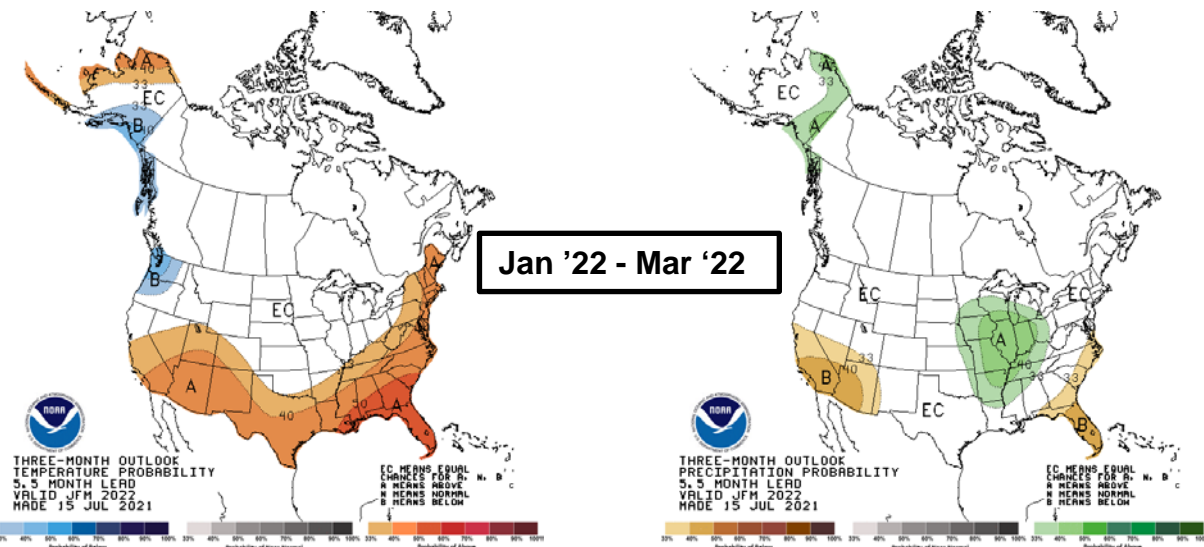
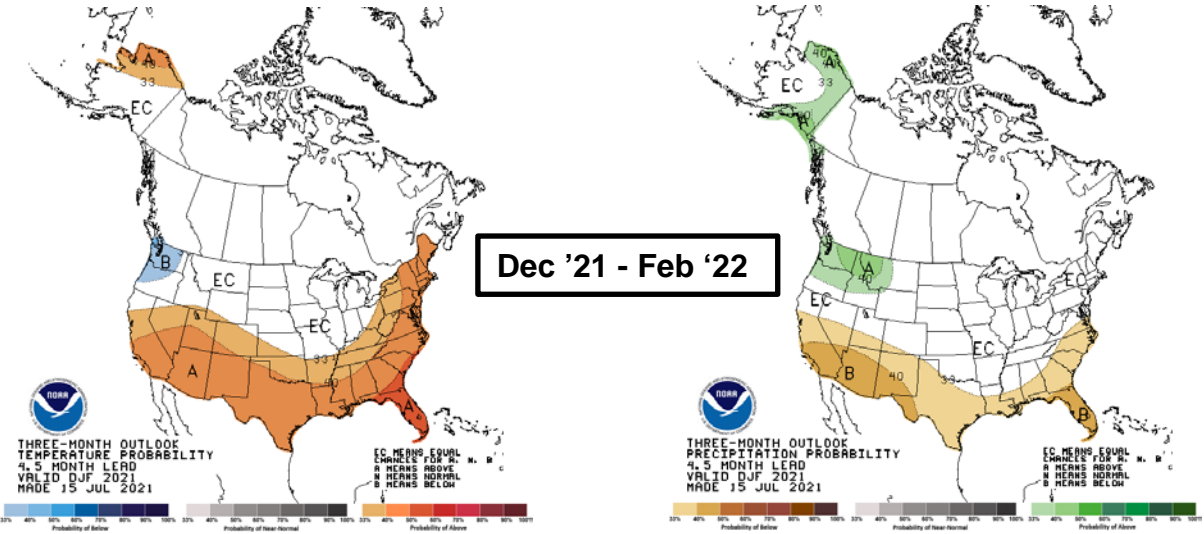
10 Day Weather - Sacramento, CA				
As of 4:35 pm PDT				
Fire Weather Watch				
Tonight	--/62°		Clear	4% S 13 mph
Tue 17	90°/62°		Sunny	4% SSW 9 mph
Wed 18	93°/60°		Sunny	1% NNW 9 mph
Thu 19	93°/58°		Sunny	2% SSW 10 mph
Fri 20	91°/57°		Sunny	5% SSW 11 mph
Sat 21	84°/56°		Sunny	6% SSW 10 mph
Sun 22	88°/57°		Sunny	5% SSW 9 mph
Mon 23	92°/59°		Sunny	4% SW 8 mph
Tue 24	95°/61°		Sunny	2% SW 7 mph
Wed 25	98°/61°		Sunny	3% SW 6 mph
Thu 26	99°/63°		Sunny	2% SW 7 mph
Fri 27	100°/62°		Sunny	1% SSW 8 mph
Sat 28	98°/62°		Sunny	2% SSW 8 mph
Sun 29	96°/60°		Sunny	2% SSW 9 mph
Mon 30	94°/59°		Sunny	2% SSW 9 mph

After a cool down in the forecast to the mid to high 90's from Aug 18th – Aug 23rd, the current NOAA Temperature and Precipitation forecast for the days following of August 24th – August 30th shows a return to hotter than normal temperatures and below normal precipitation (which for California means no rain in the growing region).



The big question now is if this coming Winter will bring the amounts of rainfall and snowpack to reverse the exceptional drought and water supply shortages that California Agriculture is facing today. The reality is there are not long-term forecasts models available to tell us what will happen with any measure of confidence. The following pages will show the products/historical data available to answer this question as of today. However, none of them bring any level of confidence in terms of accuracy.

Dec '21 - Feb '22



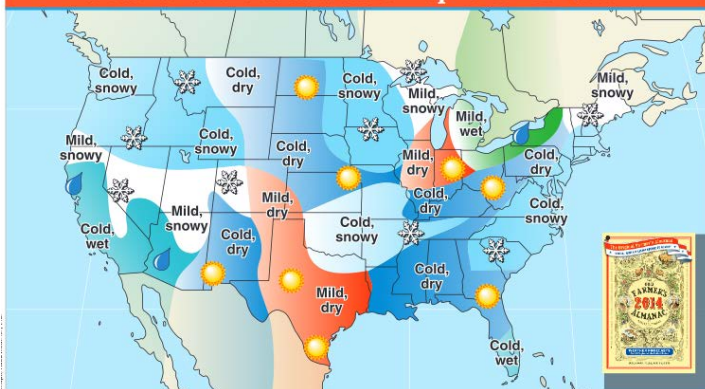
The Current NOAA Temperature and Precipitation forecast for the Winter months of 2021/2022 (December through March) shows the probability of warmer than normal temperatures and below normal precipitation.

New Farmers Almanac Winter Forecast History 2013/14 – 2021/22



← Just Released August 7th

The Old Farmer's Almanac Weather Map for Winter 2013-14



WINTER 2016-17



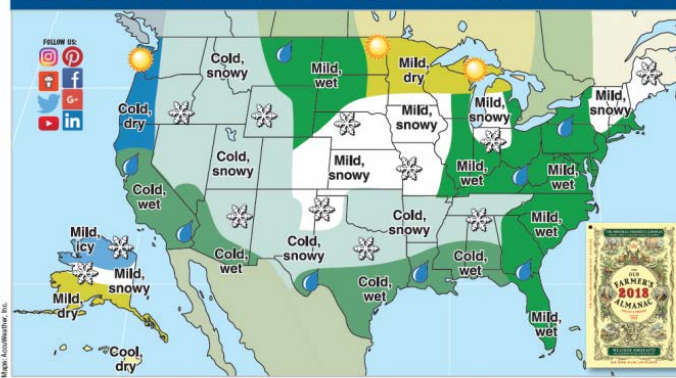
THE OLD FARMER'S ALMANAC WEATHER MAP FOR WINTER 2019-20



The Old Farmer's Almanac Weather Map for Winter 2014-15



THE OLD FARMER'S ALMANAC WEATHER MAP FOR WINTER 2017-18

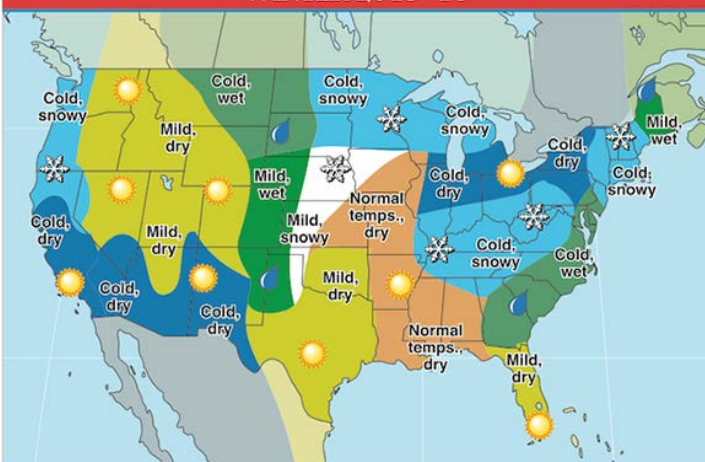


WINTER 2020-21

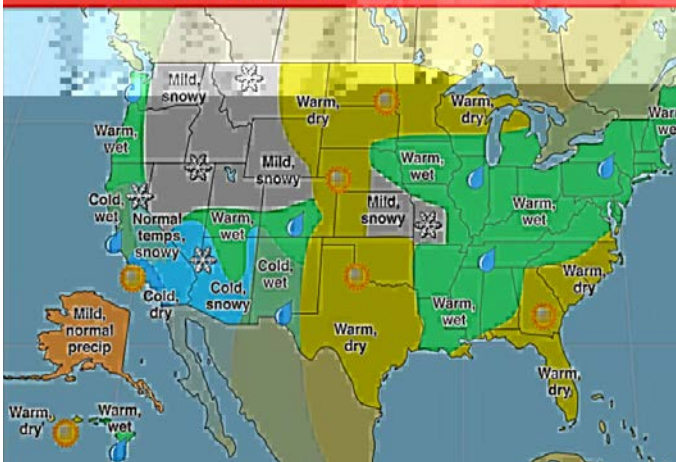


Old Farmers Almanac Winter Forecast History 2013/14 – 2021/22

WINTER 2015-16




WINTER 2018-19



2021/22 Not Yet Available

Accuracy of Old & New Farmers Almanac - California Winter Forecasts for 2013/14 - 2020/21

	Old Farmers Almanac				New Farmers Almanac				Precipitation Index			All Indexes Combined		Dec - Feb	Dec - Feb
	Temps Northern	Precip Northern	Temps Southern	Precip Southern	Temps Northern	Precip Northern	Temps Southern	Precip Southern	Northern 8 Station	Central 5 Station	Southern 6 Station	Total	% of Normal	Temp Rank	Temp Descip.
	Average:								50.20	40.08	28.97	Total Years:		127	
2013/14	Cold	Wet	Cold	Wet	Cool	Average	Cool	Average	31.31	20.37	14.16	65.84	55%	119	Hot
2014/15	Mild	Wet	Mild	Dry	Cool	Average	Cool	Average	37.20	19.00	13.60	69.80	59%	120	Hot
2015/16	Cold	Dry	Cold	Dry	Mild	Dry	Mild	Dry	57.80	40.10	25.80	123.70	104%	112	Hot
2016/17	Cold	Dry	Cold	Dry	Warm	Wet	Warm	Wet	94.99	72.70	46.90	214.59	180%	76	Mild
2017/18	Cold	Wet	Cold	Wet	Mild	Average	Mild	Average	40.95	29.70	18.10	88.75	74%	121	Hot
2018/19	Cold	Wet	Cold	Dry	Mild	Average	Mild	Average	70.72	50.00	36.80	157.52	132%	71	Mild
2019/20	Chilly	Dry	Chilly	Dry	Cold	Average	Cold	Average	31.73	24.60	18.60	74.93	63%	115	Hot
2020/21	Cool	Dry	Cool	Dry	Average	Average	Average	Wet Costal	23.30	18.11	9.70	51.11	43%	116	Hot
2021/22					Average	Average	Average	Average							
# of Times Correct:	0	3	0	4	2	1	2	2							
# of Times Wrong:	8	5	8	4	6	7	6	6							
% of Times Correct:	0.0%	37.5%	0.0%	50.0%	25.0%	12.5%	25.0%	25.0%							
% of Times Wrong:	100.0%	62.5%	100.0%	50.0%	75.0%	87.5%	75.0%	75.0%							

 = El Nino Year
 = La Nina Year

Conclusion: Both the Old and New Farmers Almanac claim that their Winter forecasts are 80-85% correct. As you can see, that may be true of other states but not California. Both have accuracy rates in terms of temperature and precipitation well below 50% for California. NOAA forecasters will tell you that no long-range forecast for the winter is worth putting together prior to the end of October and even then, it is with a low confidence level. Thus, we are left to hope that the Winter of 21/22 brings the amount of rainfall and snowpack needed to ensure some supply of water for agriculture next season. But as they say, "Hope is a bad strategy". But "Hope for the best and plan for the Worst" is all we have today and for many months to come as it relates to water supply for 2022 based on this data.

Historical El Nino/La Nina Years & Associated Precipitation Index Totals

1975/76 through 20/21 Precipitation Index Years for California

Oceanic Nino Index - 3 month Average - Sea Surface Temperature departure from Normal @ 3.4 OISST												
Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
1975	-0.5	-0.6	-0.7	-0.7	-0.8	-1.0	-1.1	-1.2	-1.4	-1.4	-1.6	-1.7
1976	-1.6	-1.2	-0.7	-0.5	-0.3	0.0	0.2	0.4	0.6	0.8	0.9	0.8
1977	0.7	0.6	0.3	0.2	0.2	0.3	0.4	0.4	0.6	0.7	0.8	0.8
1978	0.7	0.4	0.1	-0.2	-0.3	-0.3	-0.4	-0.4	-0.4	-0.3	-0.1	0.0
1979	0.0	0.1	0.2	0.3	0.2	0.0	0.0	0.2	0.3	0.5	0.5	0.6
1980	0.6	0.5	0.3	0.4	0.5	0.5	0.3	0.0	-0.1	0.0	0.1	0.0
1981	-0.3	-0.5	-0.5	-0.4	-0.3	-0.3	-0.3	-0.2	-0.2	-0.1	-0.2	-0.1
1982	0.0	0.1	0.2	0.5	0.7	0.7	0.8	1.1	1.6	2.0	2.2	2.2
1983	2.2	1.9	1.5	1.3	1.1	0.7	0.3	-0.1	-0.5	-0.8	-1.0	-0.9
1984	-0.6	-0.4	-0.3	-0.4	-0.5	-0.4	-0.3	-0.2	-0.2	-0.6	-0.9	-1.1
1985	-1.0	-0.8	-0.8	-0.8	-0.8	-0.6	-0.5	-0.5	-0.4	-0.3	-0.3	-0.4
1986	-0.5	-0.5	-0.3	-0.2	-0.1	0.0	0.2	0.4	0.7	0.9	1.1	1.2
1987	1.2	1.2	1.1	0.9	1.0	1.2	1.5	1.7	1.6	1.5	1.3	1.1
1988	0.8	0.5	0.1	-0.3	-0.9	-1.3	-1.3	-1.1	-1.2	-1.5	-1.8	-1.8
1989	-1.7	-1.4	-1.1	-0.8	-0.6	-0.4	-0.3	-0.3	-0.2	-0.2	-0.2	-0.1
1990	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.3	0.4	0.4
1991	0.4	0.3	0.2	0.3	0.5	0.6	0.7	0.6	0.6	0.8	1.2	1.5
1992	1.7	1.6	1.5	1.3	1.1	0.7	0.4	0.1	-0.1	-0.2	-0.3	-0.1
1993	0.1	0.3	0.5	0.7	0.7	0.6	0.3	0.3	0.2	0.1	0.0	0.1
1994	0.1	0.1	0.2	0.3	0.4	0.4	0.4	0.4	0.6	0.7	1.0	1.1
1995	1.0	0.7	0.5	0.3	0.1	0.0	-0.2	-0.5	-0.8	-1.0	-1.0	-1.0
1996	-0.9	-0.8	-0.6	-0.4	-0.3	-0.3	-0.3	-0.3	-0.4	-0.4	-0.4	-0.5
1997	-0.5	-0.4	-0.1	0.3	0.8	1.2	1.6	1.9	2.1	2.3	2.4	2.4
1998	2.2	1.9	1.4	1.0	0.5	-0.1	-0.8	-1.1	-1.3	-1.4	-1.5	-1.6
1999	-1.5	-1.3	-1.1	-1.0	-1.0	-1.0	-1.1	-1.1	-1.2	-1.3	-1.5	-1.7
2000	-1.7	-1.4	-1.1	-0.8	-0.7	-0.6	-0.6	-0.5	-0.5	-0.6	-0.7	-0.7
2001	-0.7	-0.5	-0.4	-0.3	-0.3	-0.1	-0.1	-0.1	-0.2	-0.3	-0.3	-0.3
2002	-0.1	0.0	0.1	0.2	0.4	0.7	0.8	0.9	1.0	1.2	1.3	1.1
2003	0.9	0.6	0.4	0.0	-0.3	-0.2	0.1	0.2	0.3	0.3	0.4	0.4
2004	0.4	0.3	0.2	0.2	0.2	0.3	0.5	0.6	0.7	0.7	0.7	0.7
2005	0.6	0.6	0.4	0.4	0.3	0.1	-0.1	-0.1	-0.1	-0.3	-0.6	-0.8
2006	-0.9	-0.8	-0.6	-0.4	-0.1	0.0	0.1	0.3	0.5	0.8	0.9	0.9
2007	0.7	0.2	-0.1	-0.3	-0.4	-0.5	-0.6	-0.8	-1.1	-1.3	-1.5	-1.6
2008	-1.6	-1.5	-1.3	-1.0	-0.8	-0.6	-0.4	-0.2	-0.2	-0.4	-0.6	-0.7
2009	-0.8	-0.8	-0.6	-0.3	0.0	0.3	0.5	0.6	0.7	1.0	1.4	1.6
2010	1.5	1.2	0.8	0.4	-0.2	-0.7	-1.0	-1.3	-1.6	-1.6	-1.6	-1.6
2011	-1.4	-1.2	-0.9	-0.7	-0.6	-0.4	-0.5	-0.6	-0.8	-1.0	-1.1	-1.0
2012	-0.9	-0.7	-0.6	-0.5	-0.3	0.0	0.2	0.4	0.4	0.3	0.1	-0.2
2013	-0.4	-0.4	-0.3	-0.3	-0.4	-0.4	-0.4	-0.3	-0.3	-0.2	-0.2	-0.3
2014	-0.4	-0.5	-0.3	0.0	0.2	0.2	0.0	0.1	0.2	0.5	0.6	0.7
2015	0.5	0.5	0.5	0.7	0.9	1.2	1.5	1.9	2.2	2.4	2.6	2.6
2016	2.5	2.1	1.6	0.9	0.4	-0.1	-0.4	-0.5	-0.6	-0.7	-0.7	-0.6
2017	-0.3	-0.2	0.1	0.2	0.3	0.3	0.1	-0.1	-0.4	-0.7	-0.8	-1.0
2018	-0.9	-0.9	-0.7	-0.5	-0.2	0.0	0.1	0.2	0.5	0.8	0.9	0.8
2019	0.7	0.7	0.7	0.7	0.5	0.5	0.3	0.1	0.2	0.3	0.5	0.5
2020	0.5	0.5	0.4	0.2	-0.1	-0.3	-0.4	-0.6	-0.9	-1.2	-1.3	-1.2
2021	-1.0	-0.9	-0.8	-0.7	-0.5	-0.4						
Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ

Precipitation Index			All Indexes Combined		EI Nino/ La Nina Intensities
Northern 8 Station	Central 5 Station	Southern 6 Station	Total	% of Normal	
50.20	40.08	28.97	119.25	Historical Norm	
28.30	46.62	20.88	95.80	80%	Strong
19.04	24.95	10.87	54.86	46%	Weak
71.56	65.18	49.91	186.65	157%	Weak
39.09	38.41	23.61	101.11	85%	
59.56	56.00	40.67	156.23	131%	Weak
37.63	26.62	19.90	84.15	71%	
84.82	67.49	42.13	194.44	163%	
88.49	77.41	56.15	222.05	186%	Very Strong
58.07	43.39	28.14	129.60	109%	Weak
37.82	31.24	25.11	94.17	79%	Weak
72.07	58.64	43.27	173.98	146%	
28.56	20.40	16.67	65.63	55%	Moderate
34.86	26.78	22.85	84.49	71%	Strong
50.13	32.88	24.85	107.86	90%	Strong
35.97	27.75	18.43	82.15	69%	
32.17	30.53	23.37	86.07	72%	
36.01	29.56	21.01	86.58	73%	Strong
65.32	53.00	37.56	155.88	131%	
31.83	24.05	20.97	76.85	64%	
85.39	70.01	45.45	200.85	168%	Moderate
61.31	43.46	30.48	135.25	113%	Moderate
68.76	54.68	34.93	158.37	133%	
82.40	65.23	54.15	201.78	169%	Very Strong
54.75	36.63	22.77	114.15	96%	Strong
56.70	41.99	27.32	126.01	106%	Strong
32.97	29.34	22.34	84.65	71%	Weak
46.34	33.25	24.90	104.49	88%	
59.77	39.17	31.87	130.81	110%	Moderate
47.29	28.30	20.12	95.71	80%	
57.51	54.41	38.53	150.45	126%	Weak
80.15	56.25	35.93	172.33	145%	Weak
37.21	24.94	16.52	78.67	66%	Weak
34.99	27.95	25.58	88.52	74%	Strong
46.85	38.91	24.90	110.66	93%	Weak
53.59	44.66	33.87	132.12	111%	Moderate
72.70	65.37	45.61	183.68	154%	Strong
41.61	24.92	21.19	87.72	74%	Moderate
44.26	26.46	16.07	86.79	73%	
31.31	20.37	14.16	65.84	55%	
37.20	19.00	13.60	69.80	59%	Weak
57.80	40.10	25.80	123.70	104%	Very Strong
94.99	72.70	46.90	214.59	180%	Weak
40.95	29.70	18.10	88.75	74%	Weak
70.72	50.00	36.80	157.52	132%	Weak
31.73	24.60	18.60	74.93	63%	
23.30	18.11	9.70	51.11	43%	Moderate

Year's where Precipitation for all Indexes Combined Totaled 130% of Normal or higher are boxed in under the "All Indexes Combined Total" column. Only two of the last ten years resulted in Total Precipitation of 130% or more. Due to the current soil dryness Conditions and Low Water Storage in our State's Reservoirs, we need to see A winter that brings 140% of normal or higher of Precipitation/snowpack in Order to have reasonable Levels of water supply for California Agriculture in 2022.

Historical El Nino/La Nina Years & Associated Precipitation Index Summary

1975/76 through 20/21 Precipitation Index Years for California

	46 Yr History - '75 to '21		Average Index Inches	% of Normal
	Count	% of History		
<u>El Nino Summary</u>				
Weak	7	15%	122.03	102%
Moderate	4	9%	132.35	111%
Strong	2	4%	85.54	72%
Very Strong	3	7%	182.51	153%
Total/Average	16	35%	131.39	110%
<u>La Nina Summary</u>				
Weak	7	15%	127.82	107%
Moderate	3	7%	91.36	77%
Strong	6	13%	102.29	86%
Total/Average	16	35%	111.41	93%
Neutral Conditions	14	30%	110.05	92%
46 Year Totals/Averages:	46	100%	120.17	101%

	Count	% of History
# of times El Nino Conditions resulted in 110% or more Precipitation	9	20%
# of times La Nina Conditions resulted in 110% or more Precipitation	4	9%
# of times Neutral Conditions resulted in 110% or more Precipitation	4	9%

	Count	% of History
# of times El Nino Conditions resulted in 110% or more Precipitation	9	20%
# of times La Nina Conditions resulted in 110% or more Precipitation	4	9%
# of times Neutral Conditions resulted in 110% or more Precipitation	4	9%

Conclusion: If you try to get an early read on the coming winter’s rainfall and snowpack using Sea Surface Temperature History (SST @ the Nino 3.4 region along the equator), the probability of getting 110% or more precipitation is low. The combined total of all three California Precipitation Indexes in years where La Nina conditions are present is only 9% over the past 46-year history. Not great odds by any standard. Thus, the strategy of “Hope for best but plan for the Worst” is still the only option at this point. An article in the link below talks about the current forecast for La Nina conditions this coming Winter and how that affects the rainfall pattern in California in the winter months.

<https://ktla.com/news/nationworld/noaa-predicts-70-chance-of-la-nina-winter-heres-what-that-means-for-socal/>