

# California Drought Update

**For April 14, 2016**  
**by Patrick Ruckert**

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## A Note To Readers

This week's report is a little different. Yes, the current state of the drought and reservoirs is covered and, in addition, we have a couple of items on what looks like an on-coming La Nina with its drier weather.

Also, noise has been raised about the Saudis having purchased thousands of acres of farm land in the West to grow alfalfa for shipping back to Saudi Arabia for their cattle. Below you will find my report and analysis of this development.

My main theme this week, though, is thinking long-term, and I key off an item I saw this week raising the question of whether or not we are in the early years of a mega-drought. Background discussion of the topic is accompanied by some historical material on how the water managers of both California and the U.S. government used to think about it. It was definitely not the fire brigade stuff that the Water Board practices today.

To get in the right frame of mind I urge you to watch the video of the April 7 Schiller Institute Conference held in New York City. The keynote address by Helga Zepp-LaRouche sets the context for addressing all the problems of the world. The first panel features, in addition to Zepp-LaRouche, speakers from China, Egypt and South Korea. The second panel focuses on reviving the U.S. space program and how our economy today is what it is because of the 1960s Apollo Project. The evening panel focused on how to uplift the thinking of the population through classical culture, with presentations and performances from gifted artists from the U.S., China, India and Europe.

**Schiller Institute Conference: Building A World Land-Bridge—Realizing Mankind's True Humanity, April 7<sup>th</sup>**

**Panel I:** <https://www.youtube.com/watch?v=Ja36WyCi1S8>

**Panel II:** [https://www.youtube.com/watch?v=Wj\\_Dz1q4NHE](https://www.youtube.com/watch?v=Wj_Dz1q4NHE)

**Panel III:** <https://www.youtube.com/watch?v=p8fMxOnTUg8>

## The Drought and the Reservoirs

As we begin the dry season, the U.S. Drought Monitor indicates that we have a good start in making this fifth year of drought worse than the first four years. Though for this date last year the drought was more intense than it is today. Last year on this date 66 percent of the state was in Extreme or Exceptional drought, and of that 44 percent was in the Exceptional column. So, the 55 percent and 31 percent for today in those categories is not quite so bad. But, to remind everyone once again, never, before July, 2014, had even one percent of the state been in the Exceptional drought category.

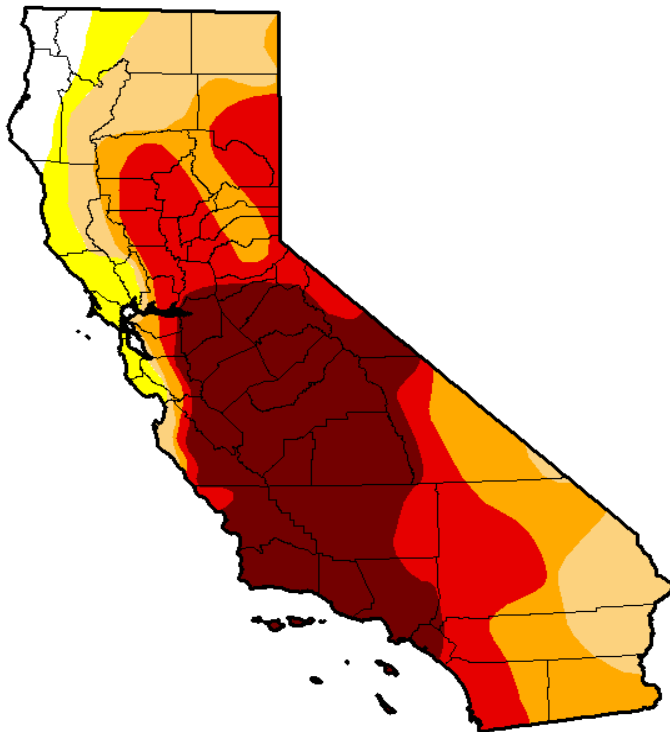
The reservoir levels are virtually unchanged from last week, with the northern reservoirs mostly full, except for Trinity Lake, and the central and southern ones are well below the half-full level. If you wish to look at the daily “Reservoir Conditions” chart published by the California Department of Water Resources, it can be found here: <http://cdec.water.ca.gov/cgi-progs/products/rescond.pdf>

## U.S. Drought Monitor California

**April 12, 2016**

(Released Thursday, Apr. 14, 2016)

Valid 8 a.m. EDT



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
<b>Current</b>	3.55	96.45	90.58	74.37	55.25	31.68
<b>Last Week</b> 4/5/2016	3.55	96.45	90.58	74.37	55.25	31.68
<b>3 Months Ago</b> 1/12/2016	0.00	100.00	97.33	87.55	69.07	42.66
<b>Start of Calendar Year</b> 12/29/2015	0.00	100.00	97.33	87.55	69.07	44.84
<b>Start of Water Year</b> 9/29/2015	0.14	99.86	97.33	92.36	71.08	46.00
<b>One Year Ago</b> 4/14/2015	0.14	99.86	98.11	93.44	66.60	44.32

*Intensity:*

- 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. See accompanying text summary for forecast statements.*

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

## Is This the First Few Years of a Mega-Drought?

Someone mentioned that in an article this week, which I cannot now locate. Good question, and one that the Water Board would not like to consider. In fact, I don't think many would like to do so. Damn, that's a question that interferes with what I have to get done today, some may say.

Mega-droughts are those that last two decades or longer. Past mega-droughts have been associated

with persistent multiyear La Nina conditions. More on the prospects of a La Nina this year below.

Two years ago I published a review of the book, **The West Without Water: What Past Floods, Droughts, and Other Climatic Clues Tell Us About Tomorrow**, by B. Lynn Ingram and Frances Malamud-Roam, paleoclimatologists at the University of California-- Berkeley. They present the climatic history of this region for the past 1,200 years, which has been an alternating climate of mega-droughts and mega-floods. Only during the past 150 years have we enjoyed a relatively wet and mild climate. This is, of course, the period of the development of the great California water management system and the period in which the population has grown to 39 million people. The last mega-flood was that of the winter of 1861-2, which put Sacramento under ten feet of water and dropped more than 60 inches of rain on Los Angeles.



*The Bristlecone Pine, found only in the White Mountains of California, a range just north of Death Valley, is the longest-living tree on Earth, living more than 4,000 years; it provides the longest record of climate changes.*

Here is the link to the book review:

*Are We Controlled by the Whims of Nature, or Will We Create Our Future?*

[http://larouchepub.com/eiw/public/2014/eirv41n19-20140509/48-52\\_4119.pdf](http://larouchepub.com/eiw/public/2014/eirv41n19-20140509/48-52_4119.pdf)

One year ago the *New York Times* printed an article titled, “In California, a Wet Era May Be Ending,” by Henry Fountain, which gave some useful background to the subject of mega-droughts..

[http://www.nytimes.com/2015/04/14/science/californias-history-of-drought-repeats.html?\\_r=0](http://www.nytimes.com/2015/04/14/science/californias-history-of-drought-repeats.html?_r=0)

As the article points out, “At least in parts of California, in two cases in the last 1,200 years, these dry spells lingered for up to two centuries.” As you can see in the chart below those mega-droughts were between the years 800 and 1400. And during this past millennium there were multiple droughts of 20 years or longer.

It appears from the chart that the last mega-drought experienced in California was in the mid-1600s. But, the past 500 years has seen droughts of about a decade quite frequently, with the exception of the past 150 years as noted above. As stated in the article, looking at the Southwest area of the nation today and the current longer dry spell over the past two decades,

*“The wider dry spell began after the last strong El Nino, the weather pattern that develops in response to warmer water temperatures in the Eastern Pacific and can bring heavy winter precipitation. That was 17 years ago. ‘What we’re seeing is nudging up to being comparable to some of the megadroughts,’ said Richard Seager, a climate scientist at Lamont-Doherty Earth Observatory in Palisades, N.Y.”*

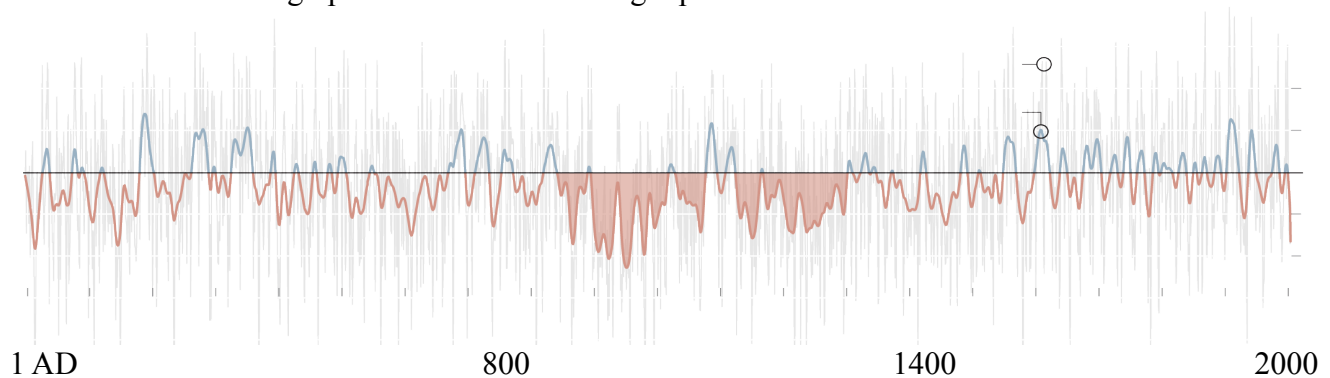
The chart below is from the *New York Times* article

## A Long History of Drought

Analysis of tree rings suggests that western states have had many droughts of two decades or longer, including two megadroughts lasting longer than 100 years.

*Palmer Drought Severity Index In California and Nevada*

The lower half of the graph in red indicates drought periods



*Sources: North American Drought Atlas, Lamont-Doherty Earth Observatory and the National Science Foundation; Journal of Quaternary Science. By The New York Times*

While those who planned and built the great projects of the California water management system may not have been familiar with this paleoclimatological history, they did act from the standpoint of providing water for the population of a rapidly growing state for 20-40 years into the future. In fact, the first great project of this system, the Los Angeles Aqueduct, completed in 1913 for a population of a city of 100,000, provided enough water for a city of one million. William Mulholland, the architect of the aqueduct, upon its completion, began to immediately plan the next great project-- The Hoover Dam and the Colorado River Aqueduct, completed by Franklin Roosevelt and the State of California in the 1930s.

That history is found in my report from 2013: **A Prometheus Among Us: William Mulholland Brings the Water to Los Angeles**

<http://amatterofmind.org/ca-drought-pdf/The%20Los%20Angeles%20Aqueduct.pdf>

A video presentation of that material is here:

<http://www.californiadroughtupdate.org/2015/06/29/william-mulholland-and-the-building-of-the-los-angeles-aqueduct/>

The same idea of providing for the future, a future that those who built it perhaps would not see, was expressed by President John F. Kennedy in six speeches he made in 1962-63, dedicating water projects in the West. Among those projects he dedicated was the San Luis Reservoir in California. Here is the

video of those speeches:

<https://www.youtube.com/watch?v=TP8xpevILNE>



*President John Kennedy at San Luis Dam ground-breaking,  
Los Banos, California, 18 August 1962*

And here is an excerpt from one of them:

*"When we are inclined to take these wonders for granted, let us remember that only a generation or two ago all the great rivers of America, the Missouri, the Columbia, the Mississippi, the Tennessee, ran to the sea unharnessed and unchecked. Their power potential was wasted. Their economic benefits were sparse. And their flooding caused an appalling destruction of life and of property. Then the vision of Theodore Roosevelt was fulfilled by Franklin Roosevelt, and to demonstrate how important this is as a national issue, two distinguished American Presidents from New York State saw how essential it was to the Nation and New York State to develop the resources of the West. And as a result this Nation began to develop its rivers systematically, to conserve its soil and its water, and to channel the destructive force of these great rivers into light and peace. And today, as a result of this, the face of this Nation has been changed. Forests are growing where there was once dirt and waste. Now there is prosperity where our poorest citizens once lived. If there is one outstanding story among all this which indicates the kind of progress we can make working together, it's the story of the REA (The Rural Electrification Administration-- PR) , and of Sam Rayburn of Texas, and Franklin Roosevelt of New York, and George Norris of Nebraska."*

*– President Kennedy, Oahe Dam, 1962*

Also demonstrating the way we used to think is this quote from then Governor Ronald Reagan in 1971 at the inauguration of the State Water Project pumps to lift water over the Tehachapis on its way to Southern California:

*"There are members of the Eastern press who are always sharpening their pencils to write about all the oddball things we do in California," Well, I hope they've got their pencils sharpened to write about what we're doing here today. We're moving more water in a man-made project than anyone has ever done, farther, and moving all of it uphill."*

## With El Nino Gone Can La Nina Be Far Behind?

There have been at least four articles this past week discussing a potential on-coming La Nina. Of these the one excerpted below has the most background. The report in the second article below puts the potential of a La Nina at 71 percent, and it will arrive in about six months.

“Will La Niña Follow One of the Strongest Ever El Niños?” from *Climate Central* on April 8 by Andrea Thompson.

<http://ww2.kqed.org/science/2016/04/08/will-la-nina-follow-one-of-the-strongest-ever-el-ninos/>

*Back in November, El Niño [reached a fever pitch](#), vaulting into the ranks of the strongest events on record and wreaking havoc [on weather patterns](#) around the world. Now it is beginning to wane as the ocean cools, so what comes next?*

*It's possible that by next fall, the tropical Pacific Ocean could seesaw into a state that is roughly El Niño's opposite, forecasters say. Called [La Niña](#), this climate state comes with its own set of global impacts, including higher chances of a dry winter in [drought-plagued California](#) and warm, wet weather in Southeast Asia.*

*But El Niños and La Niñas are particularly difficult to predict at this time of year, so exactly what happens remains to be seen.*

### **Warm-Cool Cycle**

*El Niño and La Niña are part of a cycle that runs over the course of three to seven years. While El Niño features warmer-than-normal ocean waters in the central and eastern tropical Pacific — much warmer in the case of this exceptional El Niño — La Niña features colder-than-normal waters in the same region.*

*Those changes in ocean temperatures are accompanied by changes in the atmosphere: During El Niño, convection and rains shift eastward and the normal east-to-west trade winds weaken or even reverse, while during La Niña, the normal dry state of the eastern Pacific intensifies along with the trade winds. Those atmospheric effects set off a domino effect around the world that can shift normal weather patterns.*

*La Niña's don't always follow after El Niños, but seem more likely to do so after a strong El Niño, [based on the historical record](#). That record is quite short, though, which makes it hard to draw firm conclusions from it.*

This article from the *San Jose Mercury News*, “California drought: Odds of La Niña increase for next winter, bringing concerns the drought may drag on,” by Paul Rogers on April 14, raises the odds on the potential for a La Nina (excerpts below).

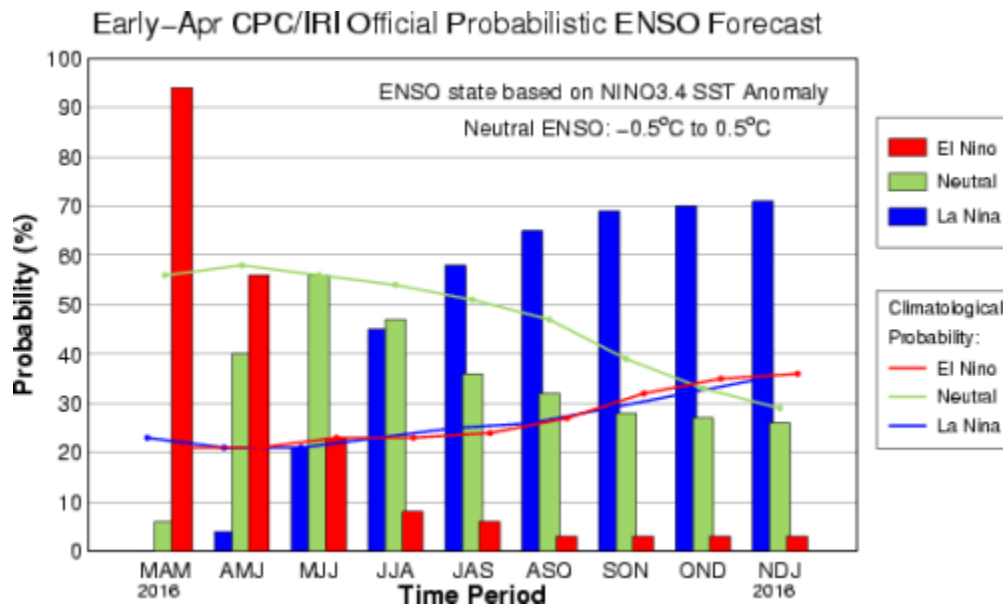
[http://www.mercurynews.com/drought/ci\\_29766133/california-drought-odds-la-nina-increase-next-winter](http://www.mercurynews.com/drought/ci_29766133/california-drought-odds-la-nina-increase-next-winter)

*In what may be an ominous sign for the end of the drought, the El Niño that brought Northern California its wettest winter in five years is continuing to weaken and appears to be giving way to its atmospheric sibling -- La Niña.*

*The shift in Pacific Ocean temperatures could mean a drier-than-normal winter is ahead, especially in already parched Southern California where La Niña conditions have historically had the most impact.*



On Thursday, NOAA -- the National Oceanic and Atmospheric Administration -- issued a La Niña watch for the first time since May 2012. Scientists at NOAA and Columbia University said that there is a 71 percent chance of La Niña conditions being present in the Pacific Ocean by November, up from 57 percent a month ago.



"At this point, odds favor the development of La Niña by the fall," said Mike Halpert, deputy director of the NOAA's Climate Prediction Center in College Park, Maryland. "And should we see La Niña develop, below-normal precipitation would be favored next winter across central and southern California."

But the growing likelihood of a La Niña event -- the shifting of trade winds and cooling of sea surface temperatures along the equator off Peru that can often follow an El Niño -- has already begun to draw the attention of state water regulators who are working to come up with a plan for how much to ease the mandatory water conservation targets they imposed on California's urban areas last June at the order of Gov. Jerry Brown.

There have been 20 La Niña years since 1950.

Rainfall in San Francisco has been below the historic average in 14 of those winters, like the dry years of 1975-76 and 1988-89, and above the historic average in only six La Niña years.

The difference in rainfall totals between La Niña years and other years is usually relatively modest, said Jan Null, a meteorologist with Golden Gate Weather Services in Saratoga who compiled the research. Also, La Niña has had more effect in Southern California.

## The Saudi Arabia Invasion of US Farm Land

The past few months have seen a handful of articles reporting on the move by Saudi Arabia to buy up U.S. farmland to grow alfalfa to ship to that country for its cows. I'll excerpt one article below, but first some commentary.

As was presented in "60 Minutes" on April 10, a fight has been underway for years to force the declassification of the "28 pages" of the Congressional report on 911. President Bush classified those pages and Obama has maintained the classification. As former U.S. Senator and co-chair of the

commission that wrote the report, Bob Graham, stated, that report demonstrates the Saudi responsibility for the worst terrorist attack on U.S. territory ever. In addition, as is well documented, the Saudis are the major funders of the ISIS terrorists in Iraq and Syria, and who have carried out terrorist attacks in the U.S., Russia and Europe. All that added to the well recognized other barbaric practices of this close ally of Britain and Obama. Here is a link providing background on the 28 pages:

<https://larouchepac.com/28pages>

If the Saudis would cease their sponsorship of the most dangerous terrorists in the world, and instead, orient their policy to the actual development of the infrastructure of the entire Middle-East/ North Africa area, they could provide water to Sudan, which has soil nearly equivalent to that of California's Central Valley. Then they could grow their alfalfa just a few hundred miles from home rather than 10,000 miles away.

This presentation by Hussein Askary shows how to do that: "Hussein Askary - South West Asia between two systems." <https://www.youtube.com/watch?v=dMwuiJi6958>

Here are some excerpts from the *oilprice.com* article from April 3, "Saudi Arabia Buying Up Land In The U.S. Southwest To Feed Its Cows."

<http://oilprice.com/Latest-Energy-News/World-News/Saudi-Arabia-Buying-Up-Land-In-The-US-Southwest-To-Feed-Its-Cows.html>

*Unable to sustain their own livestock in the desert, Saudi Arabia is scooping up more and more American farmland, with the onus now on drought-stricken U.S. states to raise the crops to feed Saudi dairy cows.*

*Saudi dairy company Almarai, which in 2014 bought 9,600 acres of farmland in Arizona, has expanded its U.S. farmland holdings to 14,000 acres, causing growing worries about the state of local water reserves in drought-stricken Palo Verde Valley in southern California.*

*Saudi Arabia is mostly desert, and water is scarce. Yet the kingdom has 170,000 dairy cows that need feed. Alfalfa is a popular cattle feed, but unfortunately, it is also a [thirsty crop](#). Since the kingdom is unable to grow alfalfa locally without reducing its water reserves to an even more dangerous level, it is buying land abroad to grow the plant.*

*This region of the United States is the driest, yet it is attractive for the Saudi company because of water rights. California, for instance, has been suffering worsening droughts for the past few years, yet water rights favor farming, specifically in Palo Verde Valley, making the state attractive for the Middle Eastern dairy firm.*

*While the battle over water rights is intensifying in California, farmers in Palo Verde have ["first dibs"](#) on water from the Colorado River. Likewise, where the Saudis bought farmland in Arizona, water rights are friendlier to farmers.*

*As AP [reports](#), Almarai is by no means the only company taking advantage of favorable legislation in the U.S. Companies from the UAE, China, and Japan, have also jumped on this bandwagon, buying up farmland in the U.S. and elsewhere and then exporting the crops back home. It's proven, for them, to make more economic sense than to grow at home.*

*It seems, however, that the Saudi farmland is rubbing Americans the wrong way, perhaps because of the size of its holdings or because of the fact that Saudi Arabia is the United States' main rival in oil, and the country that many blame for the current state of the oil market; not to mention the recent trend to see Saudi Arabia as more of a threat after long years of "partnership".*



## Today's Irony, or How Mandated Programs to “Protect the Environment” Can Backfire

This article, “Restored Wetlands in California May Be Source Of Greenhouse Gases,” from Capital Public Radio on April 13 is our irony for today (excerpts):

[http://www.capradio.org/70936?utm\\_source=feedburner&utm\\_medium=feed&utm\\_campaign=Feed%3A+CapitalPublicRadioLatestNewsRSS+%28Capital+Public+Radio%3A+Latest+News+RSS%29](http://www.capradio.org/70936?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+CapitalPublicRadioLatestNewsRSS+%28Capital+Public+Radio%3A+Latest+News+RSS%29)



*Restored wetland on Twitchell Island in 2013*

*Tens of millions of dollars from California’s greenhouse gas reduction program are being used to restore wetlands.*

*Scientists have long known that wetlands can store, or sequester, carbon dioxide. They can also be a source of methane, a more potent greenhouse gas. A [study](#) from the US Geological Survey finds that restored wetlands can release enough methane to reduce or negate the benefits of carbon sequestration. The study looked at restored wetlands in the Sacramento-San Joaquin Delta in 2010 and 2011.*

*“How that wetland was at that time was still a source of global warming potential, meaning methane was outweighing the productivity and it has that higher ability to trap heat for the earth,” says Frank Anderson, a USGS atmospheric scientist and the study's lead author.*

## And This Week's Award for Ignorance and Stupidity Goes To:

Christopher Thornberg of the *San Francisco Chronicle* on April 13, for rehashing an often discredited narrative in his article, “Obsolete California water system lets farmers grow hay in drought.” I won't waste space or time to even quote it, but if you wish to get pissed, here it is:

<http://www.sfchronicle.com/opinion/article/Obsolete-California-water-system-lets-farmers-7247090.php>