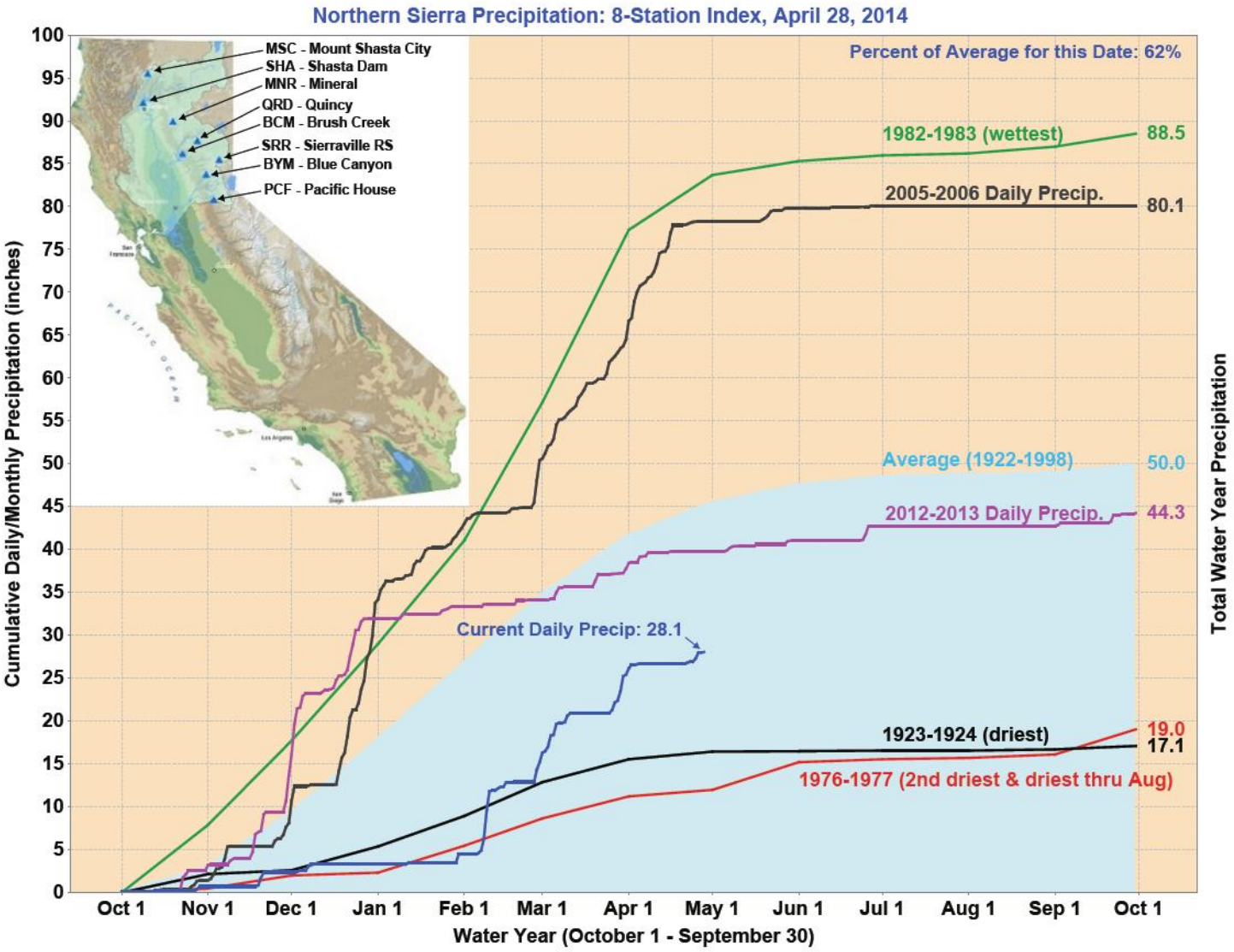
THE WATER AGENCY, INC.

Water Supply Update

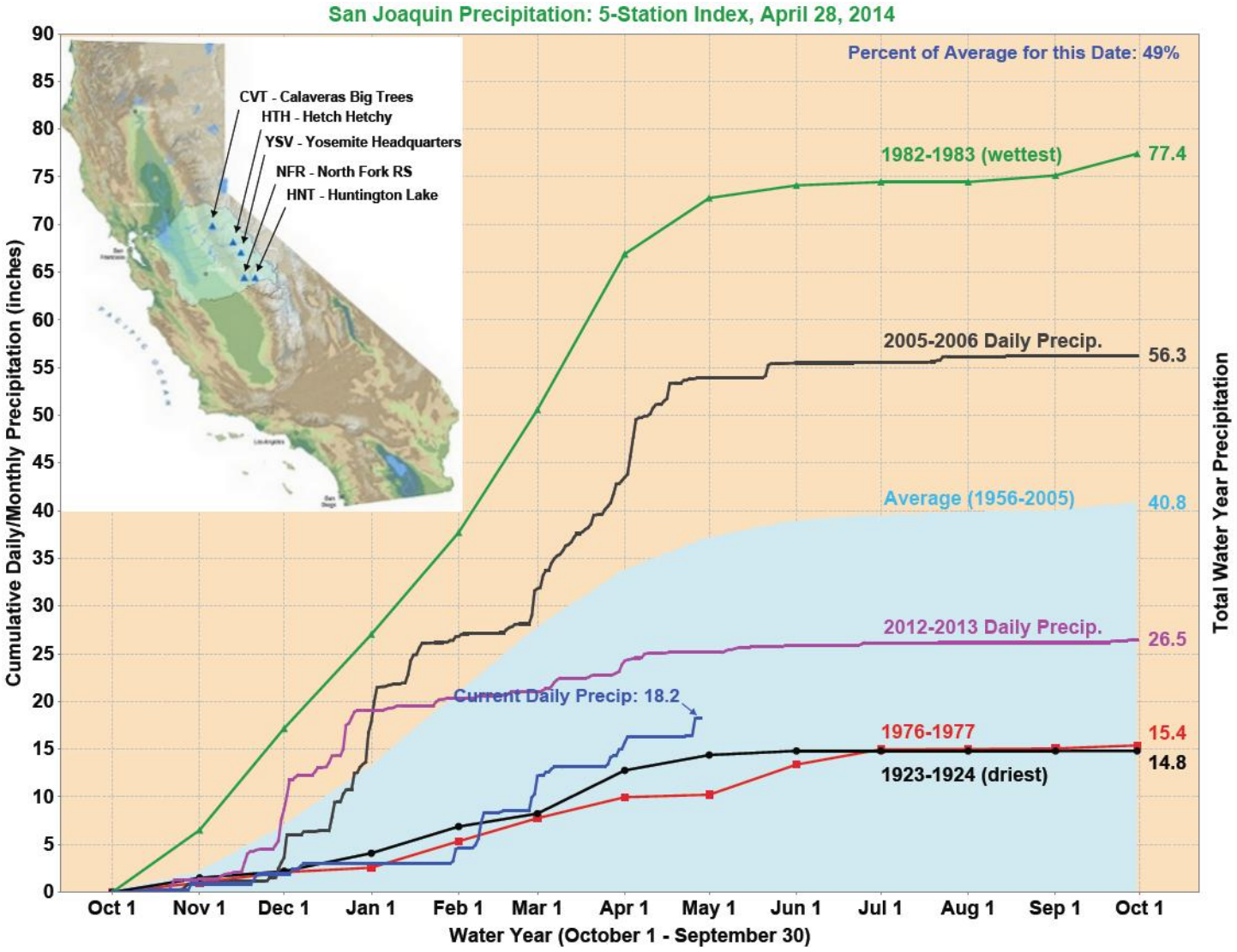
As of the morning of April 28th, the 8-station Northern California index has recorded 28.1 inches of precipitation (up 1.4 inches over last week). This now represents 62% of the typical average rainfall to date (up 2% from last week). The average total for the normal season is 50.0 inches.

This information will hopefully put to rest the zero to 5% water allocations being blamed solely on the drought. In 1977, the south of delta Central Valley Project Ag Contractors got a 25% allocation and State Water Project Ag contractors got 40%. So far, Northern California has gotten nearly 2.5 times as much precipitation this water year as we got in 1977 for October through April.

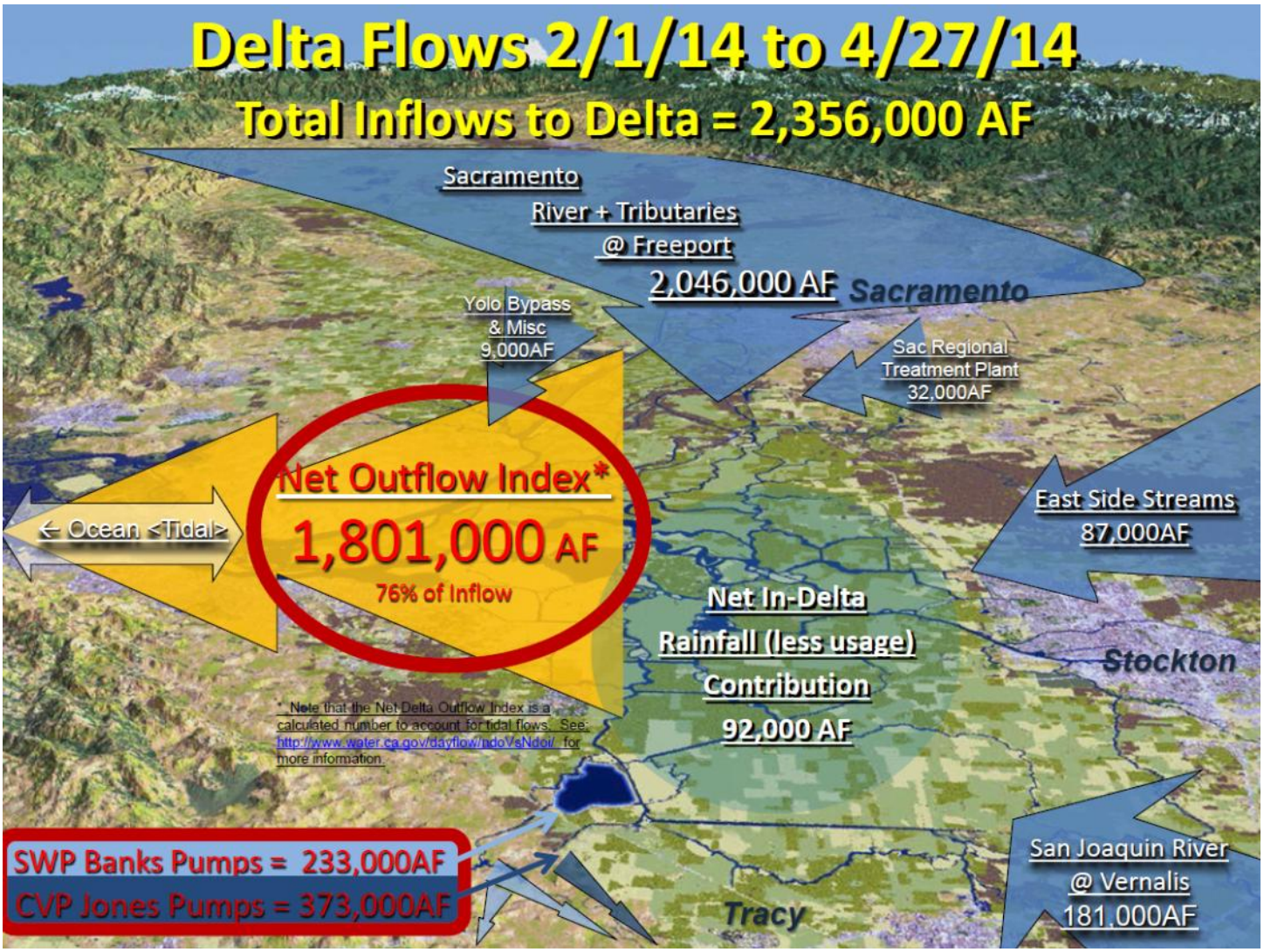


Preceding Graph from http://cdec.water.ca.gov/cgi-progs/products/PLOT_ESI.pdf

As of the morning of April 28th, the 5-station San Joaquin index has recorded 18.2 inches of precipitation (up 1.9 inches over last week). This now represents 49% of the typical average rainfall to date (up 4% from last week). The average total for the normal season is 40.8 inches.



http://cdec.water.ca.gov/cgi-progs/products/PLOT_FSI.pdf



2014-15 Westside CVP Contract Allocation:

Given that we are now so far through the precipitation season and so much water has been wasted out to the ocean, it is now highly unlikely that there will be an allocation of South of Delta Westside CVP Ag water.

San Joaquin River Exchange Contractors

The SJREC allocation is still uncertain at this time. USBR's February 21st announcement was for 40%. Since the Sacramento River Settlement Contractors and northern refuges ONLY have increased on April 18th from 40% to 75%, the *chances* are much better that SJREC may go to 65% or 75%.

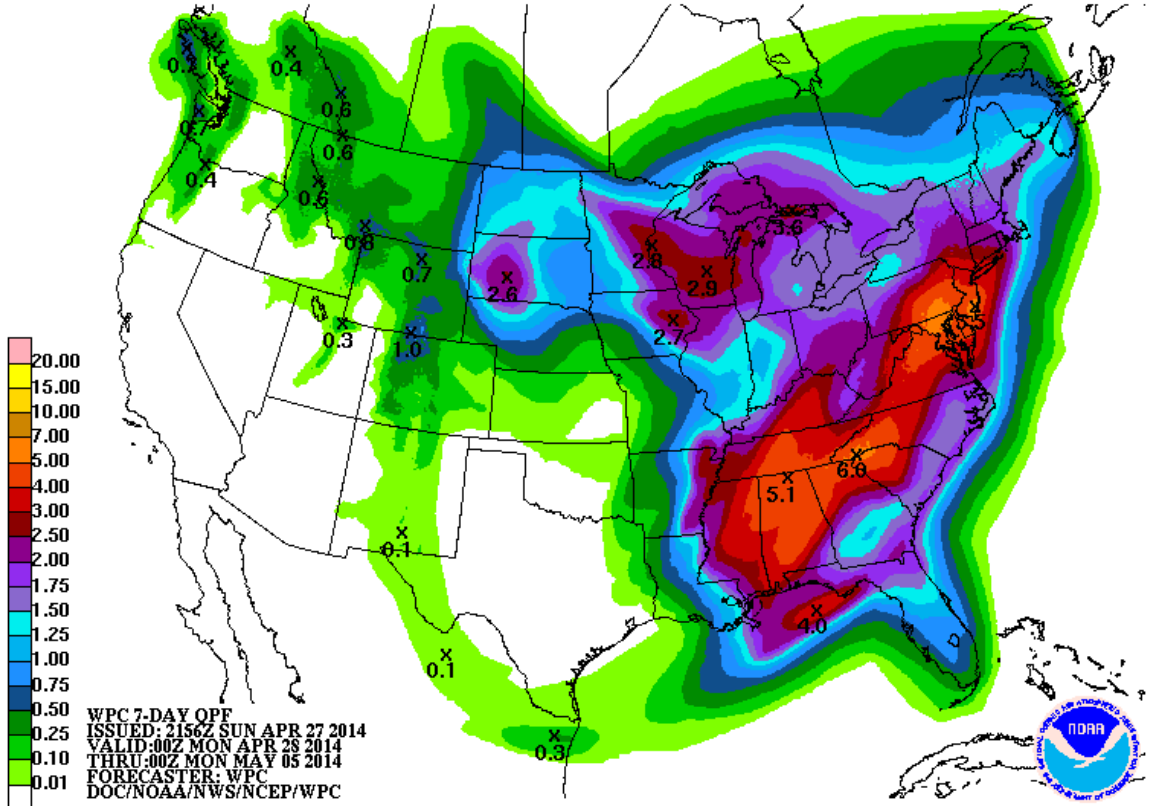
2013-14 Friant CVP Allocation:

Without the SJR Exchange Contractors moving up to 75%, a zero is still expected.

State Water Project Allocation:

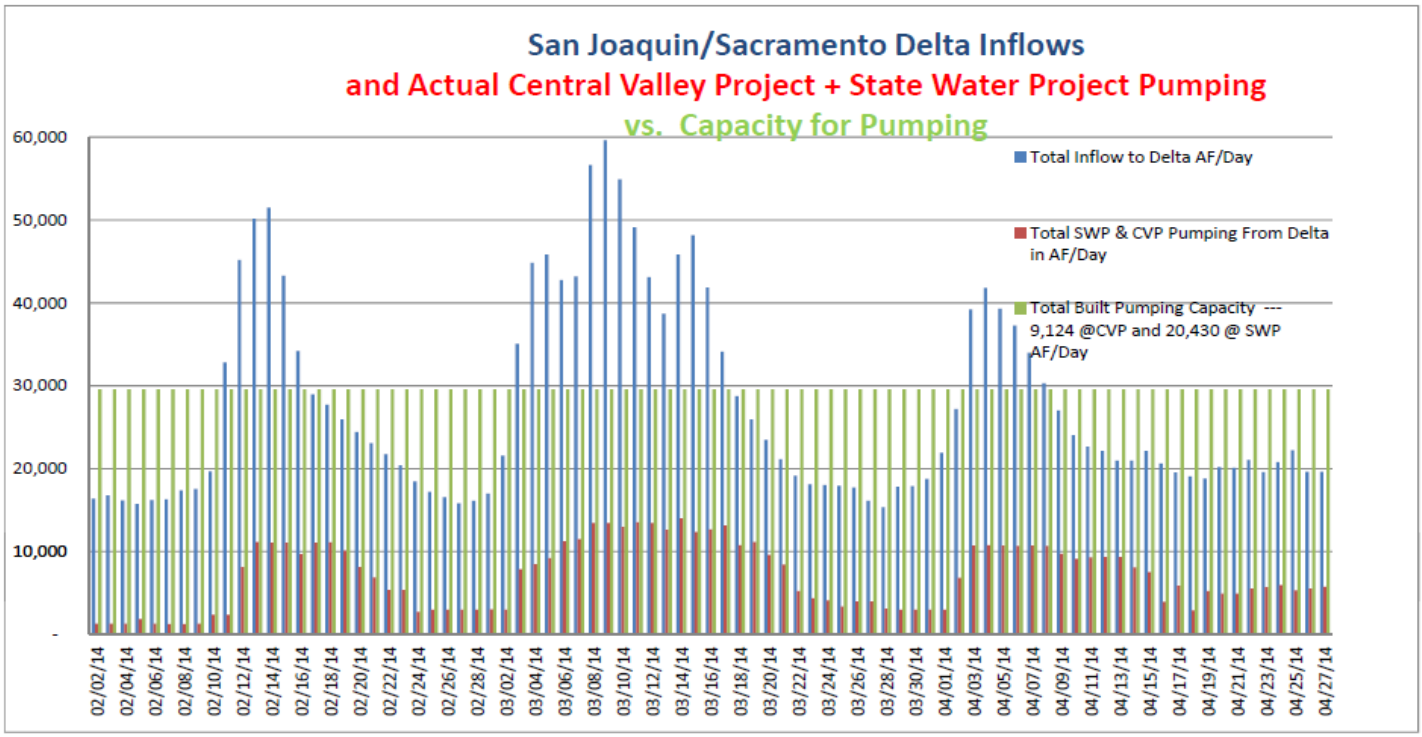
On April 18, 2014, it was announced that the 5% allocation for the SWP is back on. Note that we have heard that the 5% allocation of water is most likely only going to be deliverable after September 1, 2014.

Not Expecting Any Precipitation for California This Week

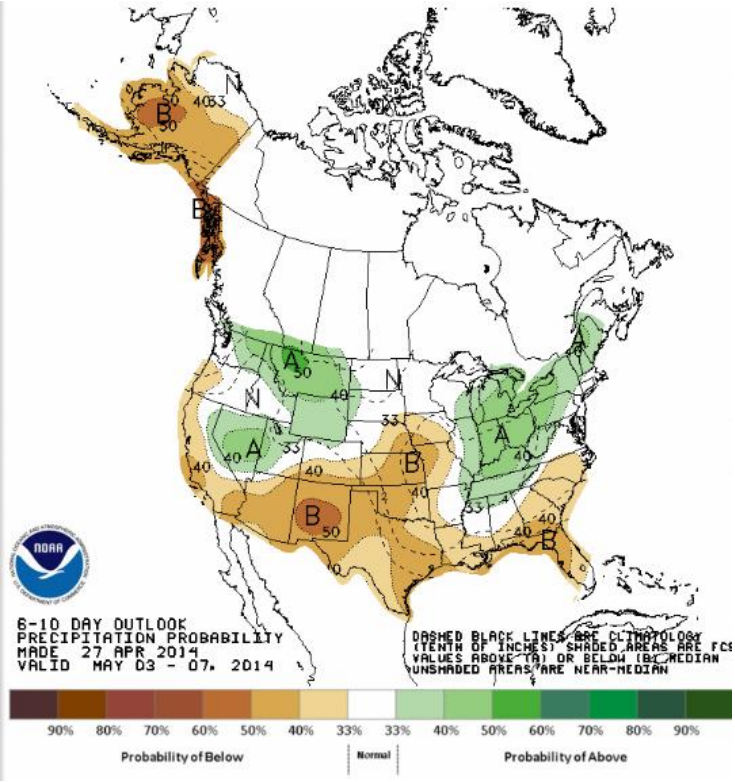


http://www.hpc.ncep.noaa.gov/qpf/p168i00.gif

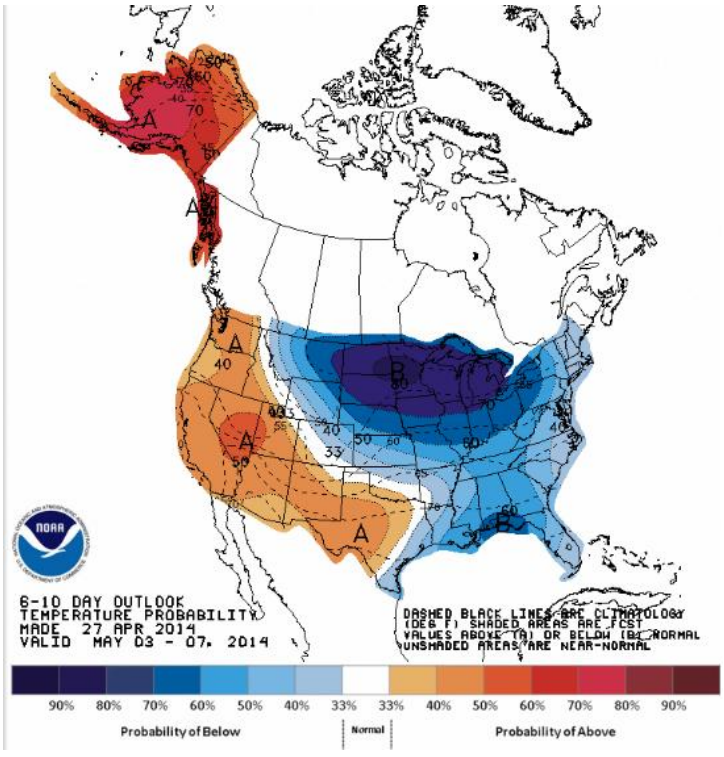
Unfortunately, much of the rain we have received has not been captured.



6-10 day Precipitation Forecast:

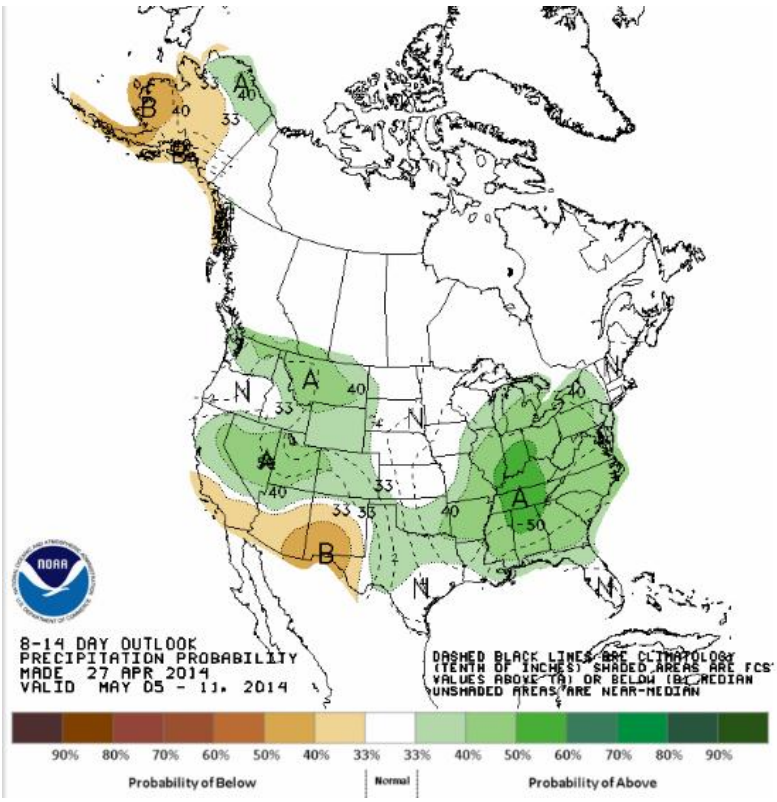


6-10 day Temperature Forecast:

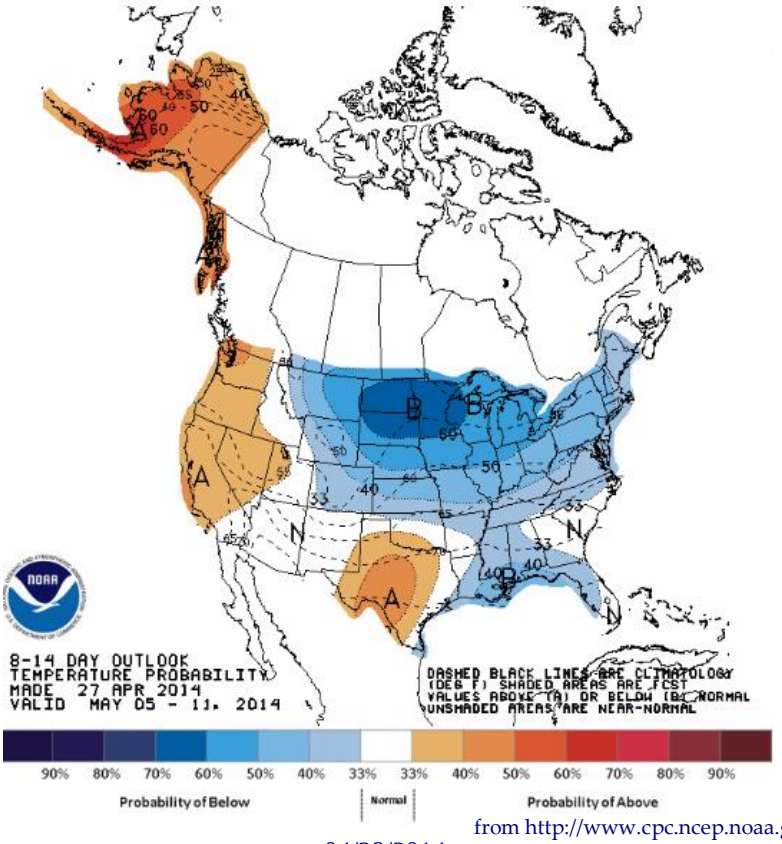


from: http://www.cpc.ncep.noaa.gov/products/predictions/610day/

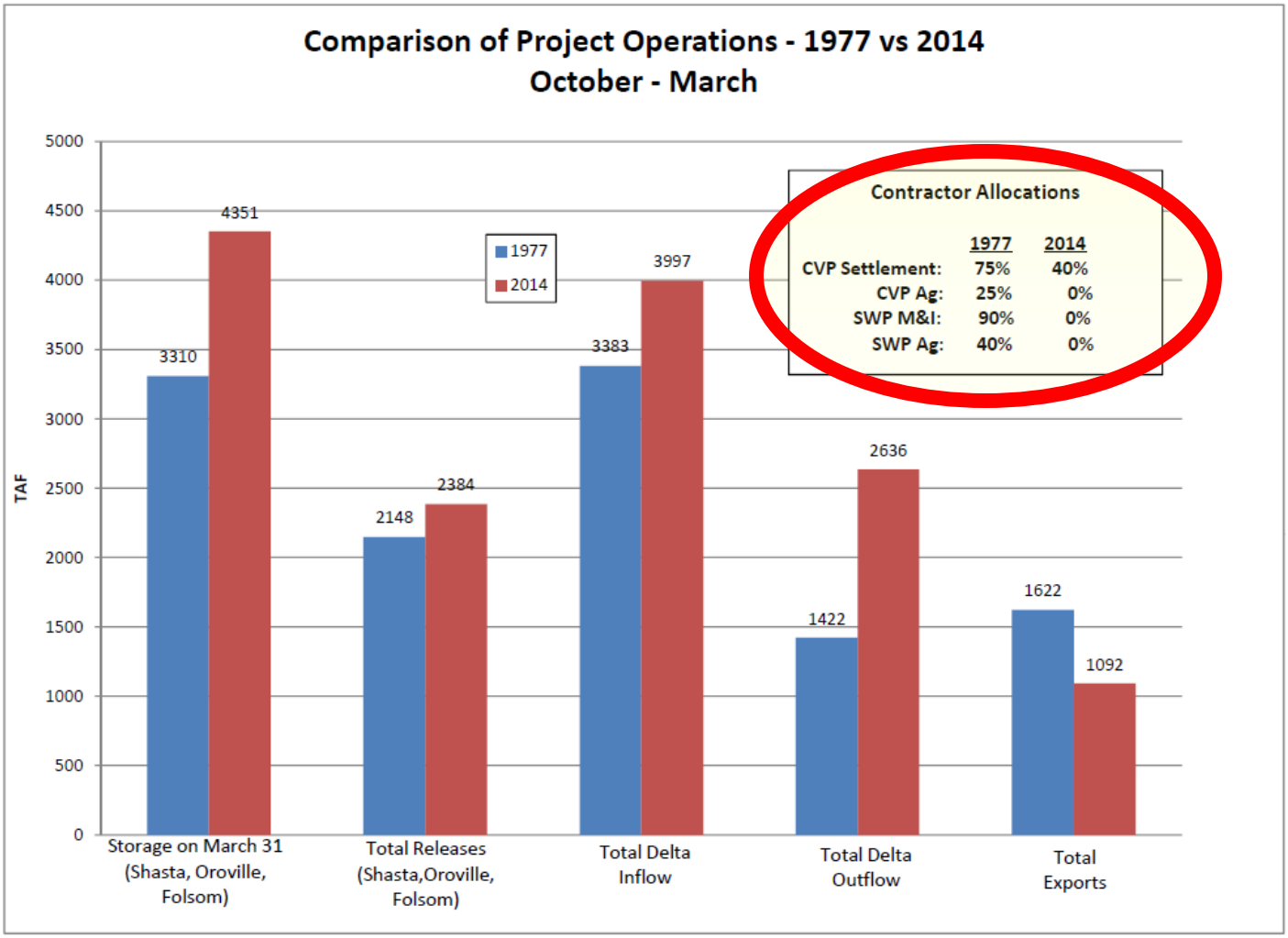
8-14 day Precipitation Forecast:



8-14 day Temperature Forecast:



from http://www.cpc.ncep.noaa.gov/products/predictions/814day/

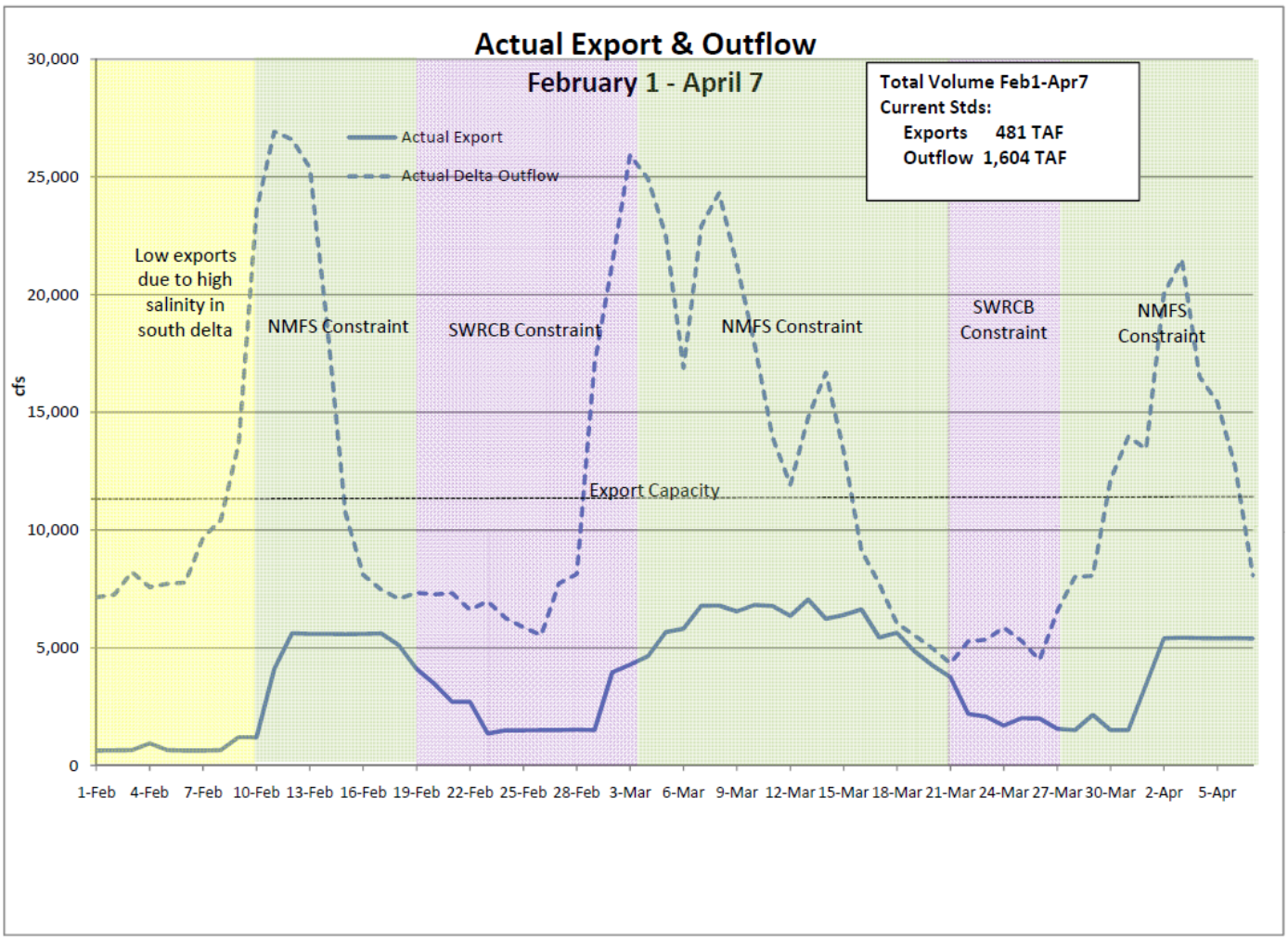


T.Boardman, SLDMWA
4/4/2014

The graph above by Tom Boardman of the San Luis and Delta Mendota Water Authority is instructive. Note the red circle I put around the allocations given in 2014 and 1977. The difference is shocking , especially since we have spilled 1.2 million acre-feet more out into the ocean this year as compared to that year.

Note the CVP Sacramento River Contractors are now at 75%, but South of Delta Exchange Contractors are still at 40% and South of Delta Ag Service Contractors are at 0% allocations.

The graph below from Tom Boardman at the San Luis and Delta Mendota Water Authority shows that it has mainly been the National Marine Fisheries (US Department of Commerce) Salmon Biological Opinion and the State Water Resource Control Board as limiting constraints on the projects.



T. Boardman, SLDMWA
4/8/2014

Northern Sierra 8-Station Precipitation (inches)

Water Year 2014

Thursday, April 24, 2014

October Total:	**0.7 "**	**Percent of Monthly October Average:**	**23%**
October Monthly Average:	3.0 "		
November Total:	**1.5 "**	**Percent of Monthly November Average:**	**24%**
November Monthly Average:	6.3 "		
December Total:	**0.8 "**	**Percent of Monthly December Average:**	**10%**
December Monthly Average:	8.4 "		
January Total:	**1.3 "**	**Percent of Monthly January Average:**	**14%**
January Monthly Average:	9.0 "		
February Total:	**11.5 "**	**Percent of Monthly February Average:**	**144%**
February Monthly Average:	8.0 "		
March Total:	**9.9 "**	**Percent of Monthly March Average:**	**143%**
March Monthly Average:	6.9 "		
April Total:	**1.2 "**	**Percent of Monthly April Average:**	**31%**
April Monthly Average:	3.9 "		
May Total:	**"**	**Percent of Monthly May Average:**	**0%**
May Monthly Average:	2.1 "		
June Total:	**"**	**Percent of Monthly June Average:**	**0%**
June Monthly Average:	1.0 "		
July Total:	**"**	**Percent of Monthly July Average:**	**0%**
July Monthly Average:	0.2 "		
August Total:	**"**	**Percent of Monthly August Average:**	**0%**
August Monthly Average:	0.3 "		
September Total:	**"**	**Percent of Monthly September Average:**	**0%**
September Monthly Average:	0.9 "		

		Total precipitation since 0400 PST Thursday 04/17/2014:	**0.2"**

(Monthly totals may not add up to seasonal total because of rounding)

Seasonal Total to Date:	**26.9 "**	**Percent of Seasonal Average to Date:**	**60%**
Seasonal Average to Date:	44.7 "		
Water Year Average	**50.0 "**	**Percent of an Average Water Year:**	**54%**

Notes:

Last year seasonal total: 41.1 "
92 %

Last year Apr 2013 total: 1.5 "
38 %

Last year Mar 2013 total: 4.3 "
62 %

Driest Water Years	Driest Oct—Mar (1920)	Wettest Water Years
17.1" in 1924	1977 = 11.2	1983 88.5 "
19.0" in 1977	1924 = 15.5	1995 85.4 "
27.7" in 1939	1976 = 20.8	1982 84.8 "
28.0" in 1931	1931 = 21.8	1998 82.4 "
28.3" in 1976	1929 = 22.4	2006 80.1 "
	1939 = 23.1	
	1990 = 25.1	
	2014 = 25.7	
	1991 = 26.0	

25.7"/ 11.2" = 2014 is 2.3 times wetter than 1977 for Oct to March

http://cdec.water.ca.gov/cgi-progs/products/8-Stations_Tab.pdf

San Joaquin 5-Station Precipitation (inches)

Water Year 2014

Thursday, April 24, 2014

October Total:	**0.9 "**	**Percent of Monthly October Average:**	**45%**
October Monthly Average:	2.0 "		
November Total:	**1.0 "**	**Percent of Monthly November Average:**	**21%**
November Monthly Average:	4.7 "		
December Total:	**1.1 "**	**Percent of Monthly December Average:**	**18%**
December Monthly Average:	6.2 "		
January Total:	**1.7 "**	**Percent of Monthly January Average:**	**22%**
January Monthly Average:	7.6 "		
February Total:	**5.6 "**	**Percent of Monthly February Average:**	**81%**
February Monthly Average:	6.9 "		
March Total:	**4.7 "**	**Percent of Monthly March Average:**	**77%**
March Monthly Average:	6.1 "		
April Total:	**1.4 "**	**Percent of Monthly April Average:**	**40%**
April Monthly Average:	3.5 "		
May Total:	**"**	**Percent of Monthly May Average:**	**0%**
May Monthly Average:	1.8 "		
June Total:	**"**	**Percent of Monthly June Average:**	**0%**
June Monthly Average:	0.6 "		
July Total:	**"**	**Percent of Monthly July Average:**	**0%**
July Monthly Average:	0.3 "		
August Total:	**"**	**Percent of Monthly August Average:**	**0%**
August Monthly Average:	0.2 "		
September Total:	**"**	**Percent of Monthly September Average:**	**0%**
September Monthly Average:	0.8 "		

		Total precipitation since 0400 PST Thursday 04/17/2014:	**0.1"**

(Monthly totals may not add up to seasonal total because of rounding)

Seasonal Total to Date:	**16.4 "**	**Percent of Seasonal Average to Date:**	**45%**
Seasonal Average to Date:	36.4 "		
Water Year Average	**40.8 "**	**Percent of an Average Water Year:**	**40%**

Notes:

Last year seasonal total:	25.1 " 69 %		
Last year Apr 2013 total:	1.9 " 54 %	Last year Mar 2013 total:	2.3 " 38 %

Driest Water Years	Driest Oct—Mar (1920)	Wettest Water Years	
14.8" in 1924	1977 = 10.0	1983	77.4 "
15.4" in 1977	1924 = 12.6	1995	70.0 "
20.4" in 1987	**2014 = 15.0**	1969	67.9 "
22.3" in 1931	1931 = 16.0	1982	67.5 "
23.6" in 1968		1998	65.2 "

http://cdec.water.ca.gov/cgi-progs/products/5-Stations_Tab.pdf

Long Range Forecast—

The Climate Prediction Center/NCEP issued a new Update on April 28, 2014:

ENSO Alert System Status: El Niño Watch
• ENSO-neutral conditions continue.*

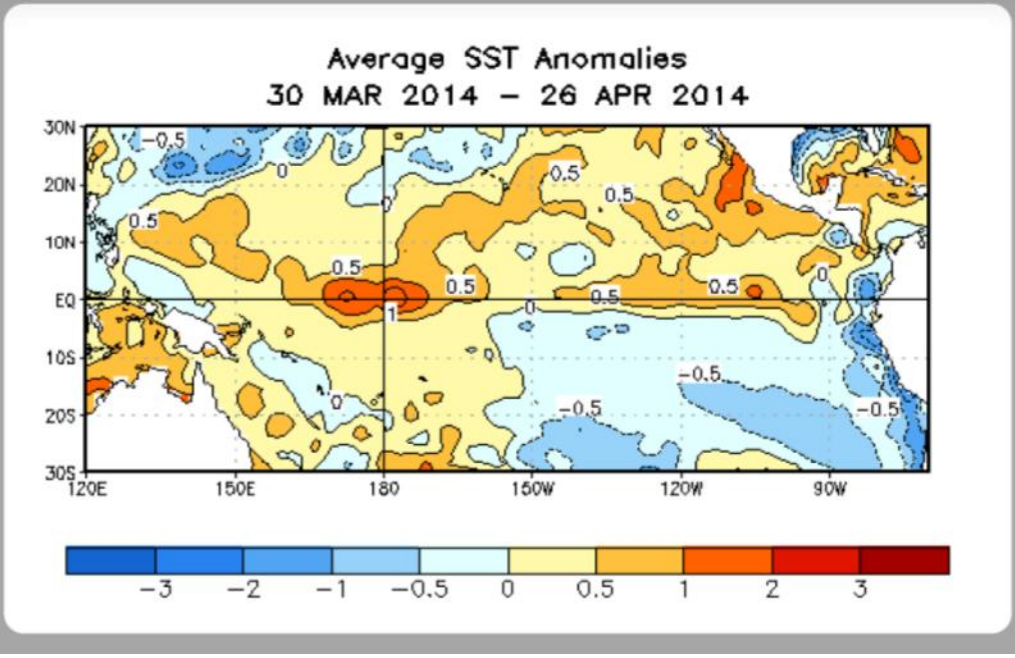
• Equatorial sea surface temperatures (SST) were above-average near the International Date Line and across much of the eastern Pacific.

• While ENSO-neutral is favored for Northern Hemisphere spring 2014, the chances of El Niño increase during the remainder of the year, exceeding 50% by summer.*

* Note: These statements are updated once a month in association with the ENSO Diagnostics Discussion:
http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory

SST Departures (°C) in the Tropical Pacific During the Last Four Weeks

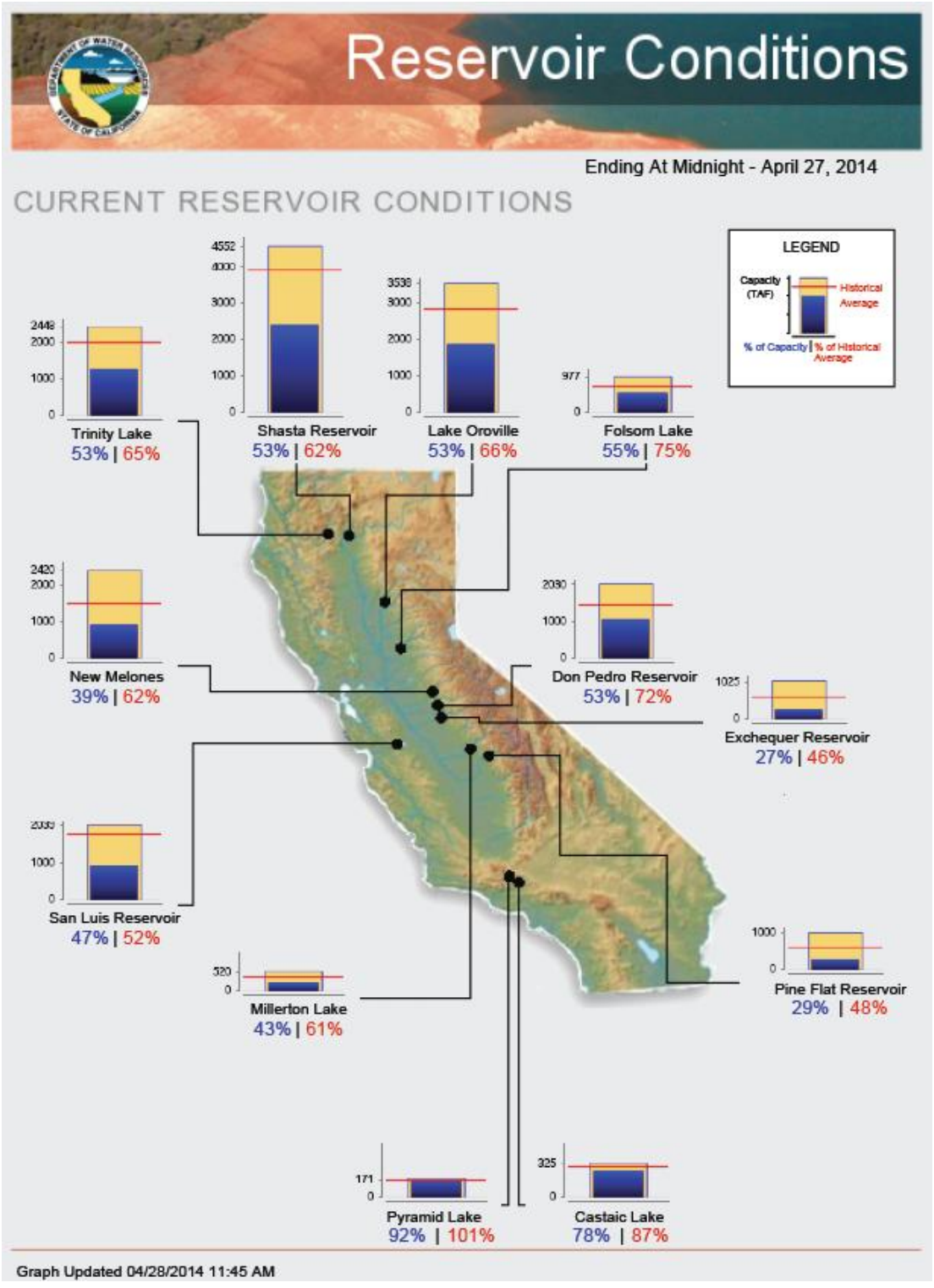
During the last four weeks, equatorial SSTs were above average around the International Date Line and between 145°W and 95°W.



http://www.cpc.ncep.noaa.gov/products/analysis_monitoring/lanina/enso_evolution-status-fcsts-web.pdf

Reservoir Storage

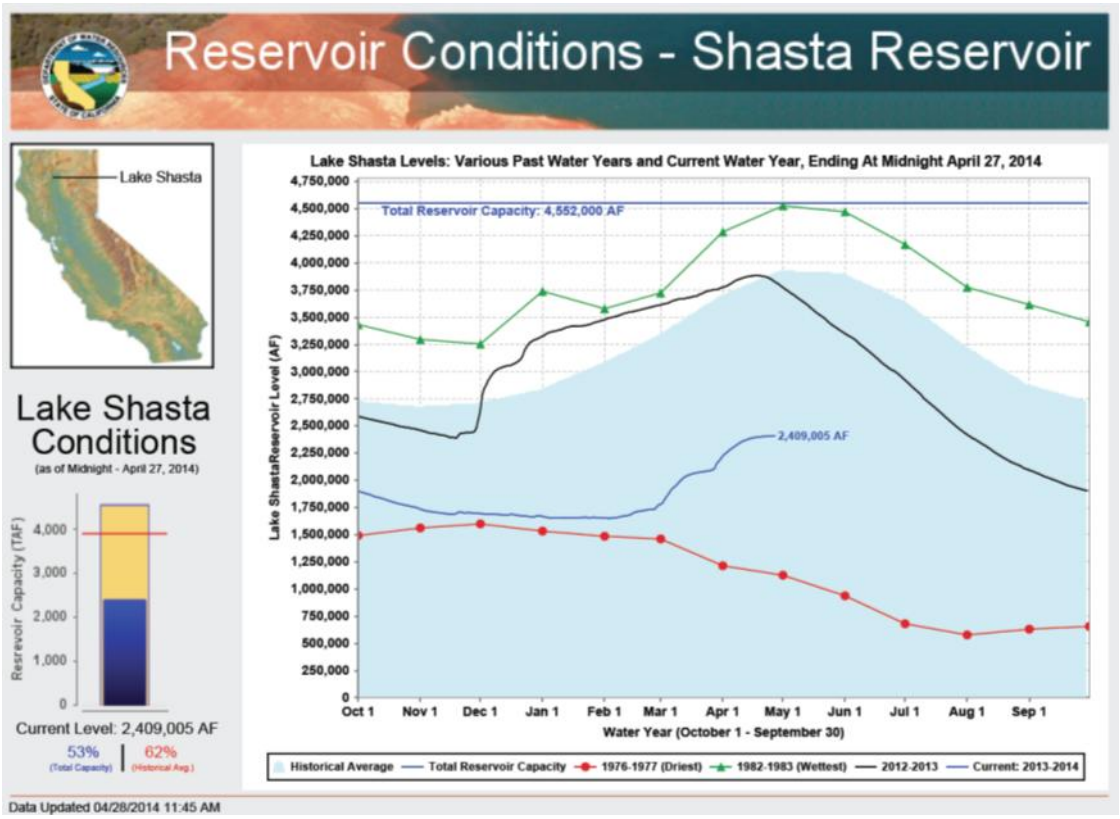
The main Northern California reservoirs are between 62-75% of historical average—Oroville and Folsom are up 1% of capacity. The central ones are between 46-72% of historical average.



http://

Shasta Storage

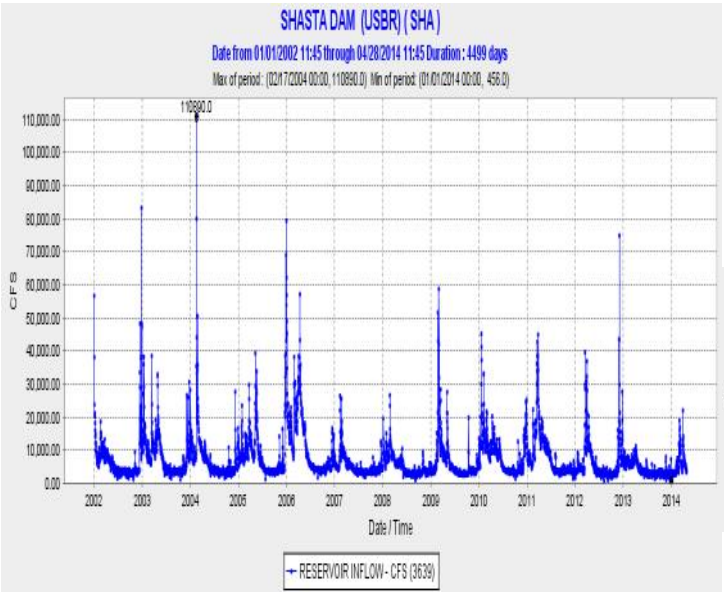
As of April 27th, storage was approximately 2,400,822AF, up 8,183AF from last week (53% capacity, no change) and compares to 3,827,000AF one year ago. The current level is 62% of the historical average.



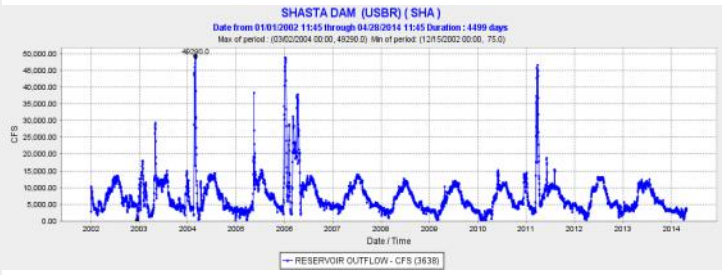
Total capacity of Shasta is about 4,552,000AF. Shasta's weekly average inflows are about 8,130AF/ day, and outflows are about 7,172AF/day as of Sunday.

Reservoir graphs from: http://cdec.water.ca.gov/reservoir_map.html

Inflows

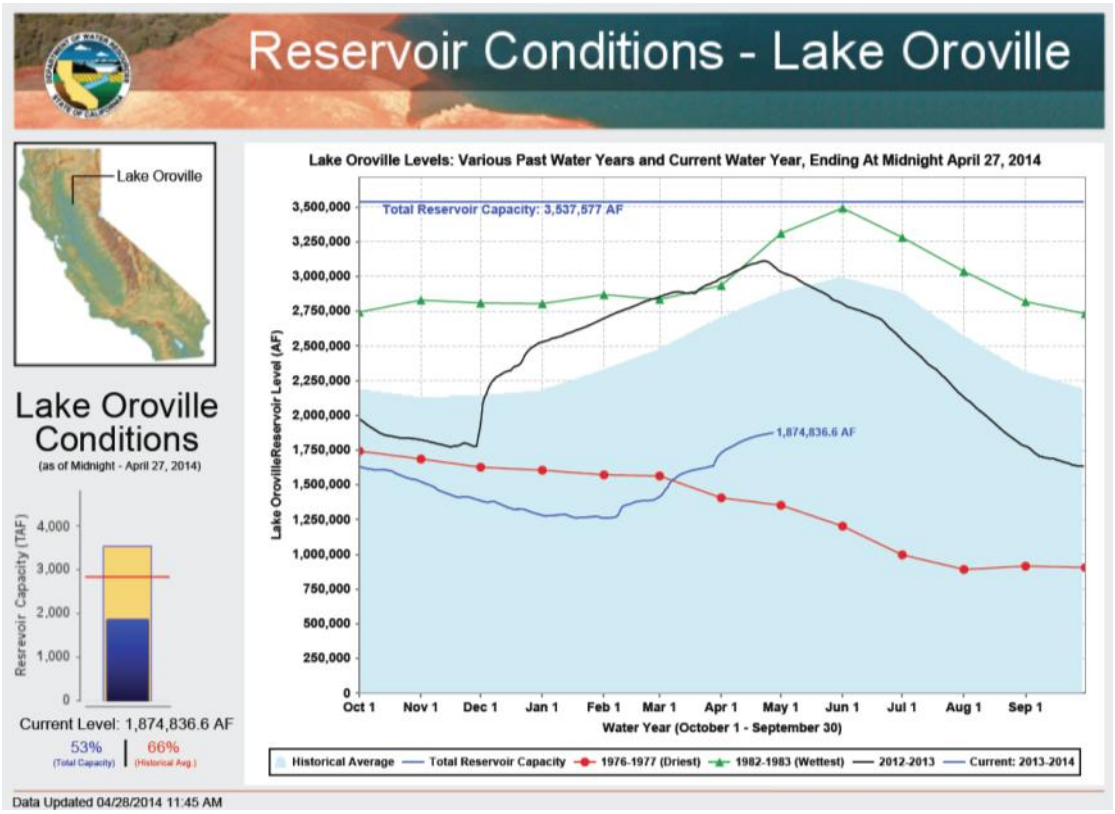


Outflows



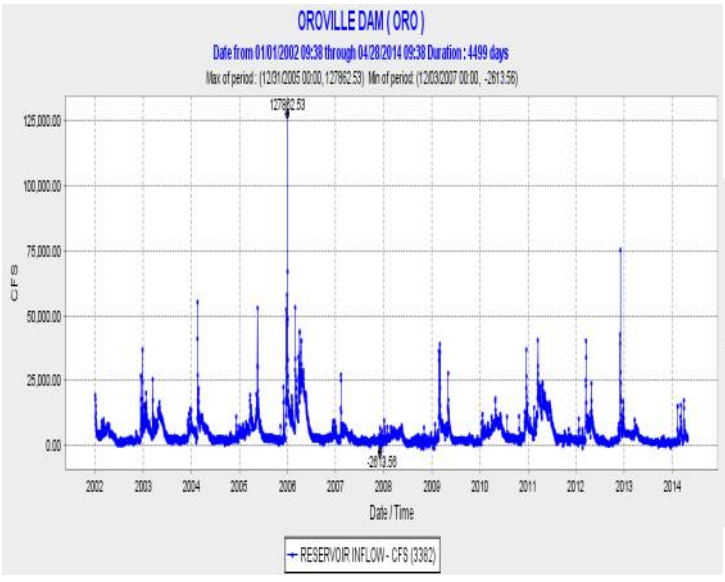
Oroville Storage

As of April 27th, storage was approximately 1,874,837AF, up 19,197AF from last week (53% capacity, up 1%) and compares to 3,077,000AF one year ago. The current level is 66% of the historical average.

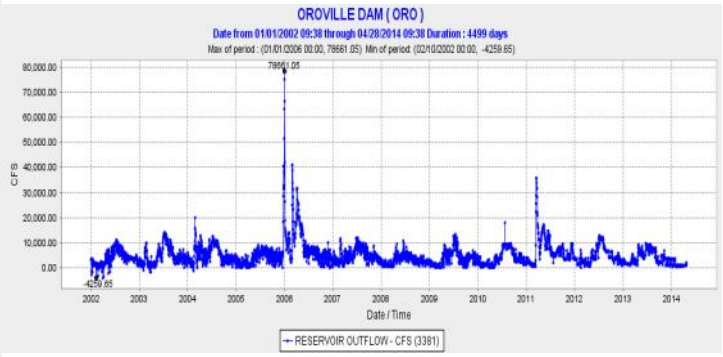


Inflows for the past week averaged 5,222AF/day. Total capacity of Oroville is 3,538,000AF. Current releases into the Feather River as of Sunday have gone to 2,448AF/day.

Inflows

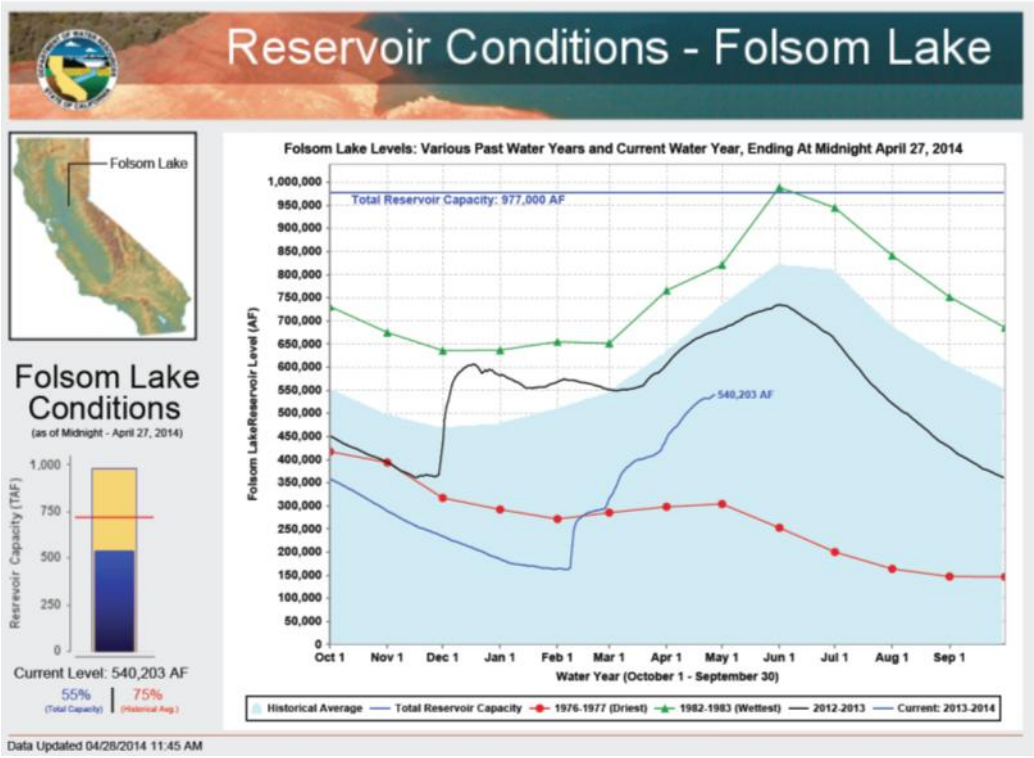


Outflows

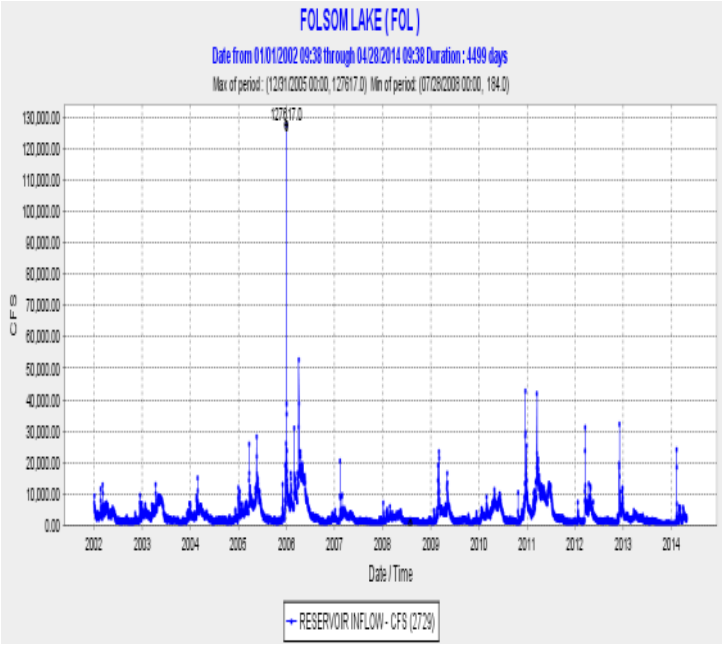


Folsom Storage

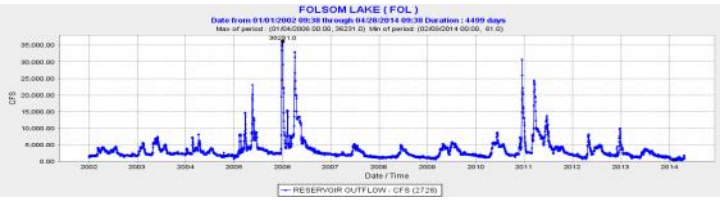
As of April 27th, storage was approximately 540,203AF, up 10,817AF (55% capacity—a 1% gain from last week) and compares to 677,000AF one year ago. The current level is 75% of the historical average. Inflows for the past week averaged 4,054AF /day. Total capacity of Folsom is 977,000AF. As of Sunday, releases were about 1,676AF/day.



Inflows

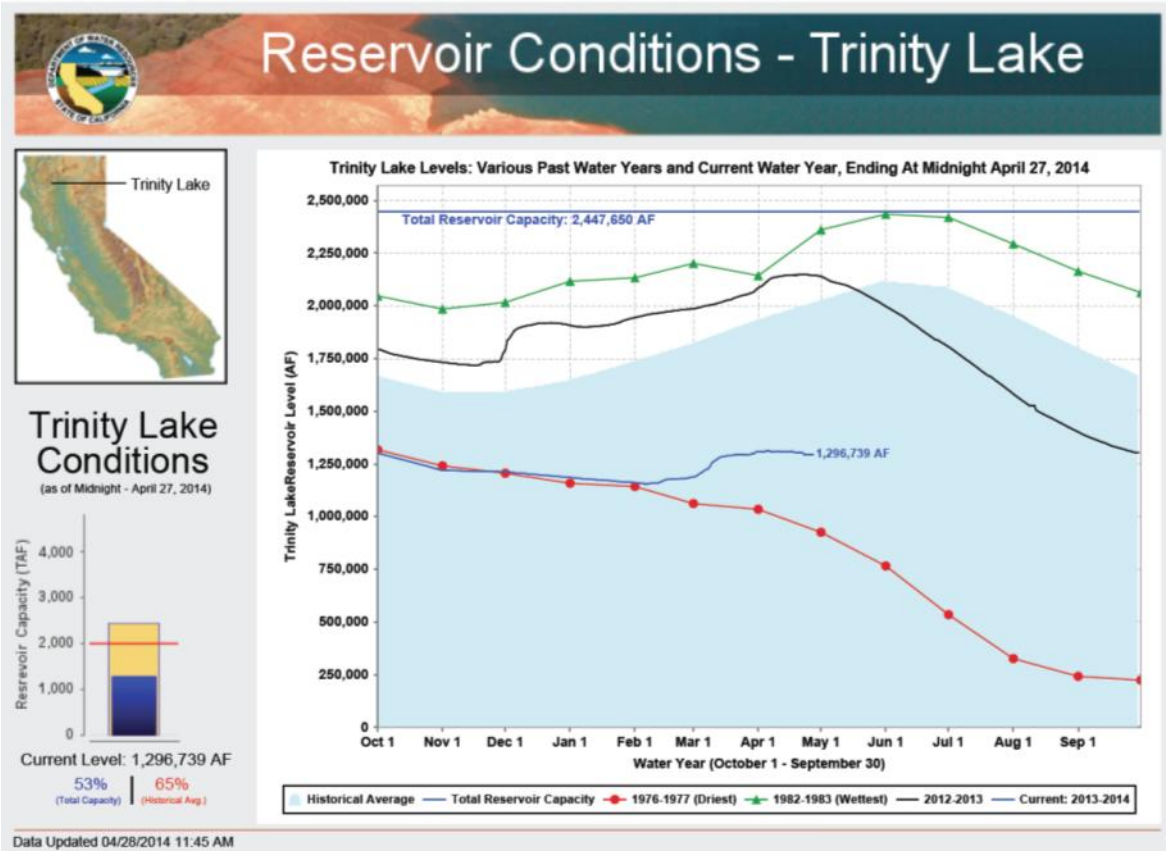


Outflows



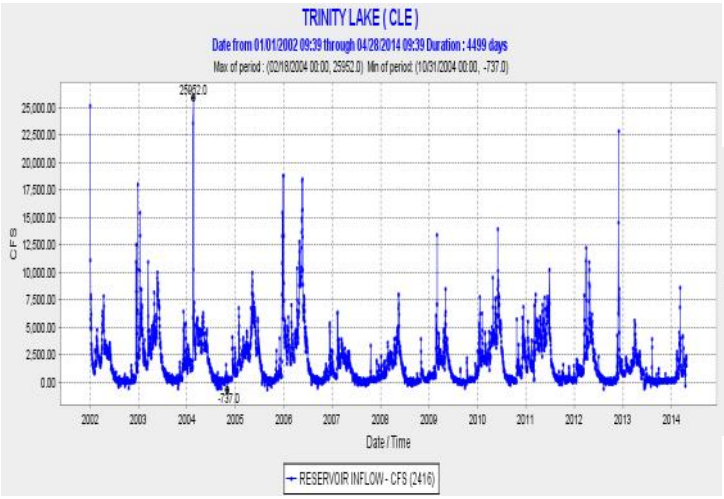
Trinity Lake Storage

As of April 27th, storage was approximately 1,296,739AF, down 7,035AF from last week (53% capacity, no change) and compares to 2,144,000AF one year ago. The current level is 65% of the historical average.

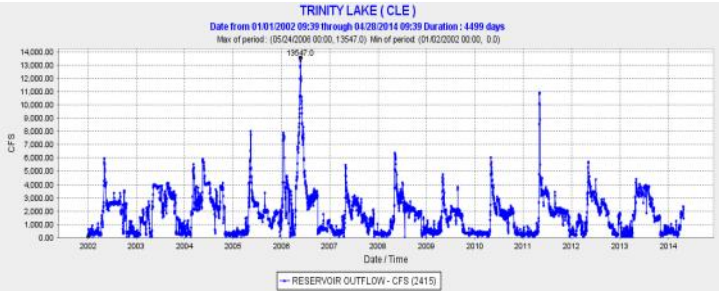


Net inflows for the past week averaged 3,980AF/day. Total capacity of the Trinity is about 2,448,000AF. On Sunday, releases to the Trinity River were about 2,870AF/day.

Inflows

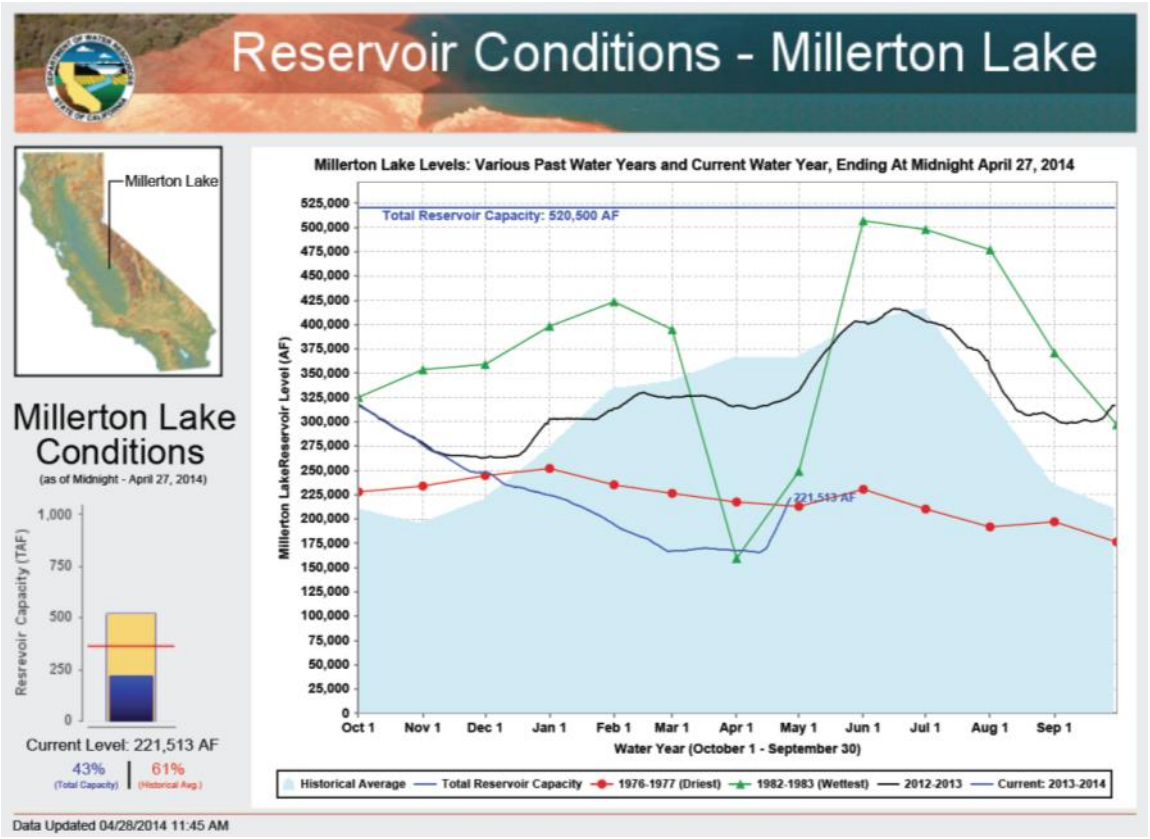


Outflows

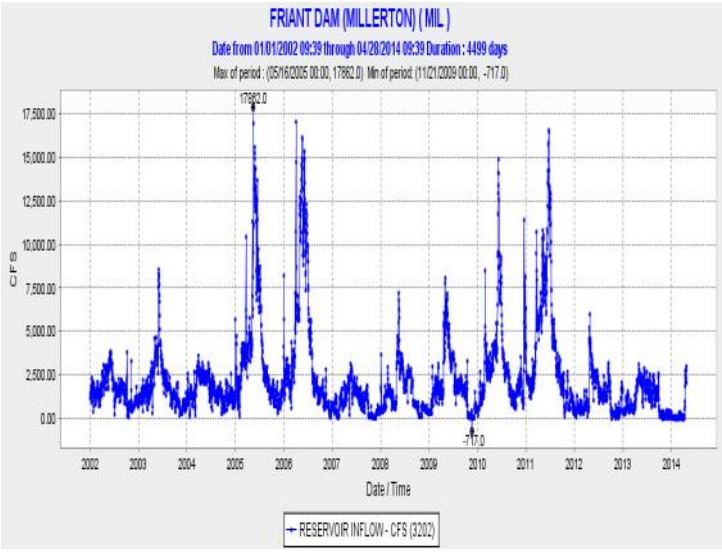


Friant Storage

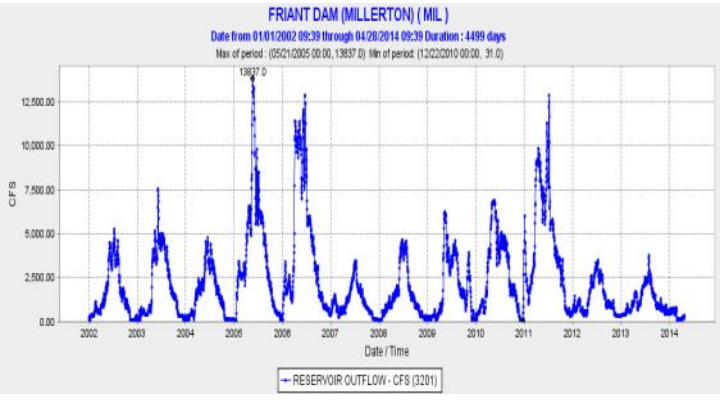
As of April 27th, storage was about 221,513AF (43% capacity, up 7%) and compares to 326,000AF one year ago. The current level is 61% of the historical average. Inflows for the last week averaged about 5,138AF/day. Total capacity of Friant is 520,500AF. On Sunday, 174CFS was released into the Friant/Kern Canal, 0CFS was released into the Madera Canal, and 170CFS was released into the San Joaquin River, which is below the *new normal "river restoration" minimum flow of 350CFS*. The eight upstream San Joaquin River reservoirs are about 43% full, holding 264,306AF of their 611,688AF capacity.



Inflows

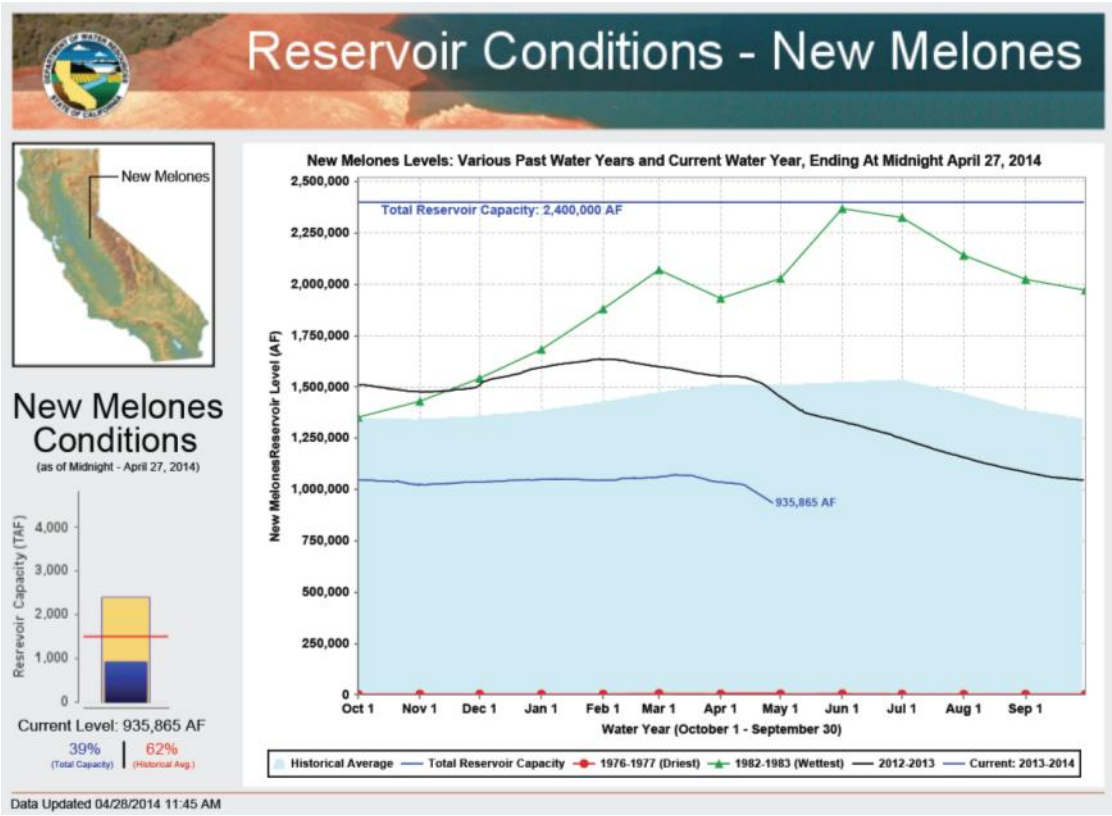


Outflows

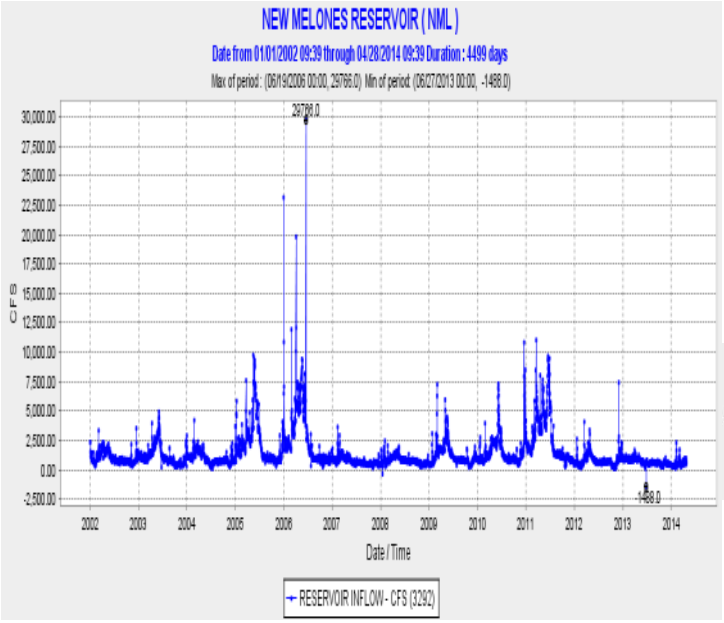


New Melones Storage

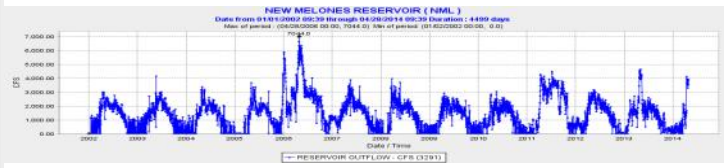
As of April 27th, storage was approximately 935,865AF (39% capacity, down 2%), down 42,974AF, and compares to 1,480,000AF one year ago. The current level is 62% of the historical average. Inflows for the past week averaged 1,248AF/day. Total capacity of New Melones is 2,420,000AF. Current releases to the Stanislaus River have been adjusted to 7,018AF/day.



Inflows

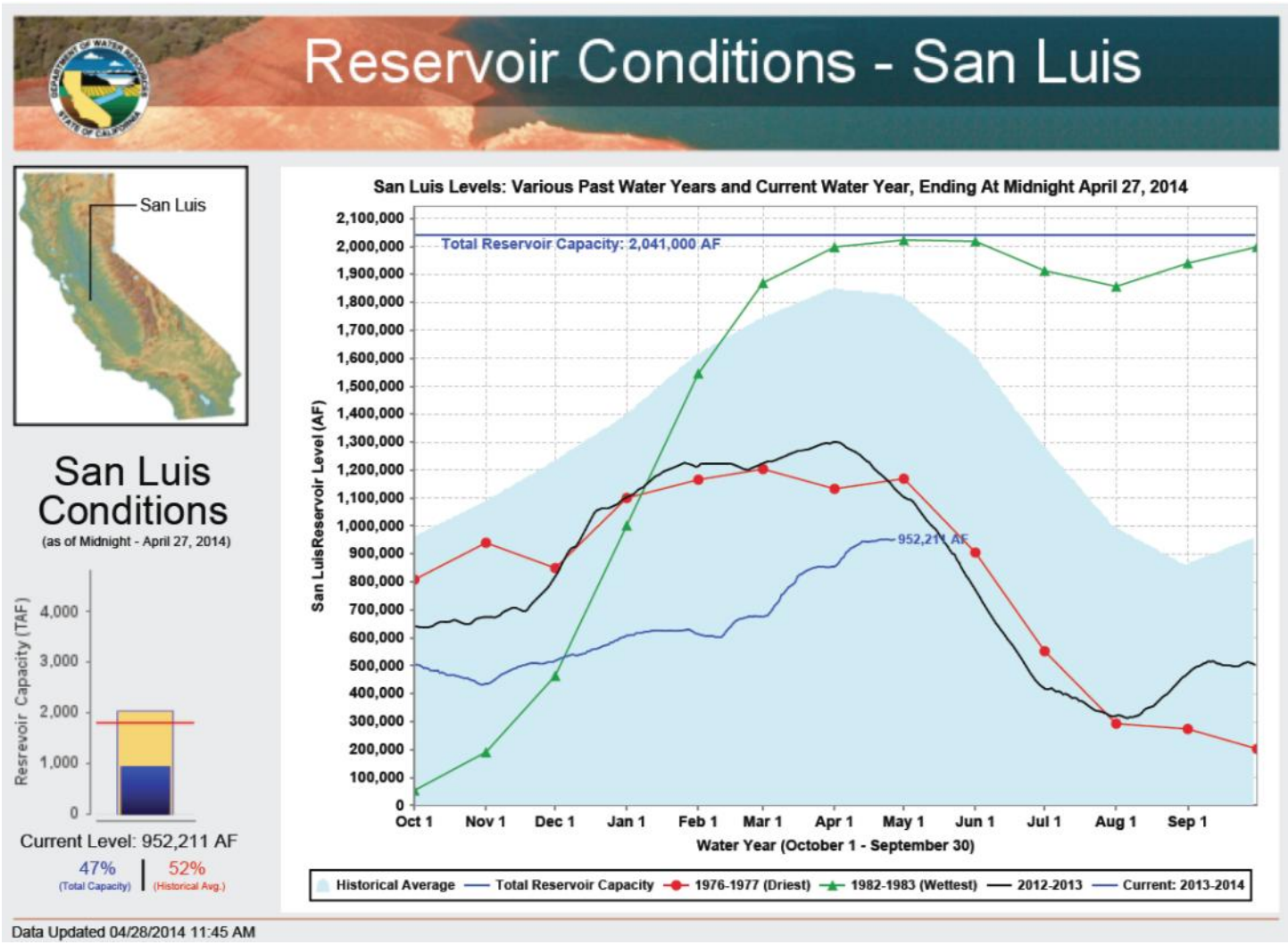


Outflows



San Luis Reservoir Storage

San Luis storage is up 2,363AF this week and is at 47% of capacity (no change). The historical average is at 52% for this time of year.



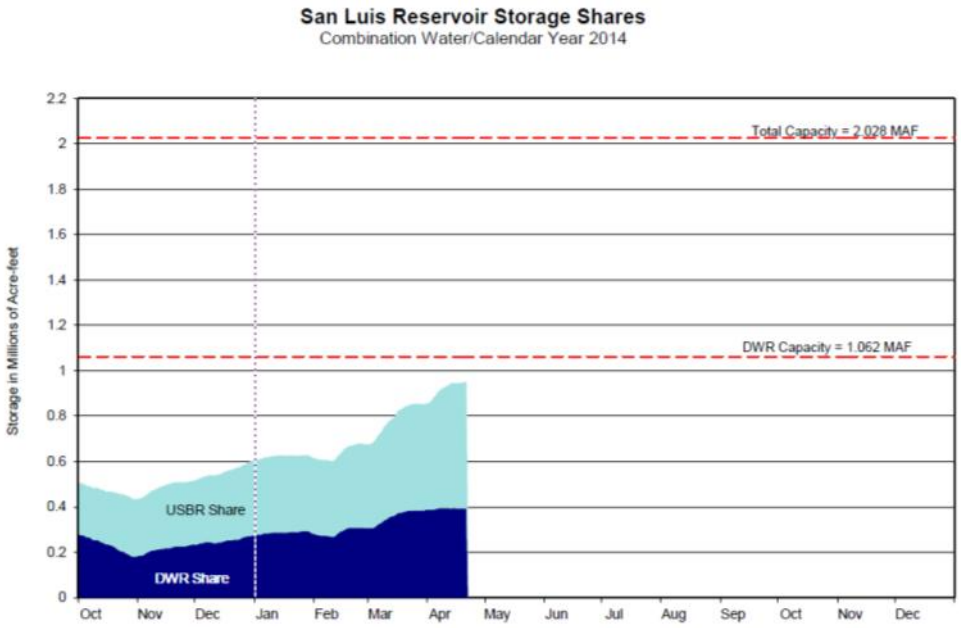
http://cdec.water.ca.gov/reservoir_map.html

Federal Storage within San Luis Reservoir

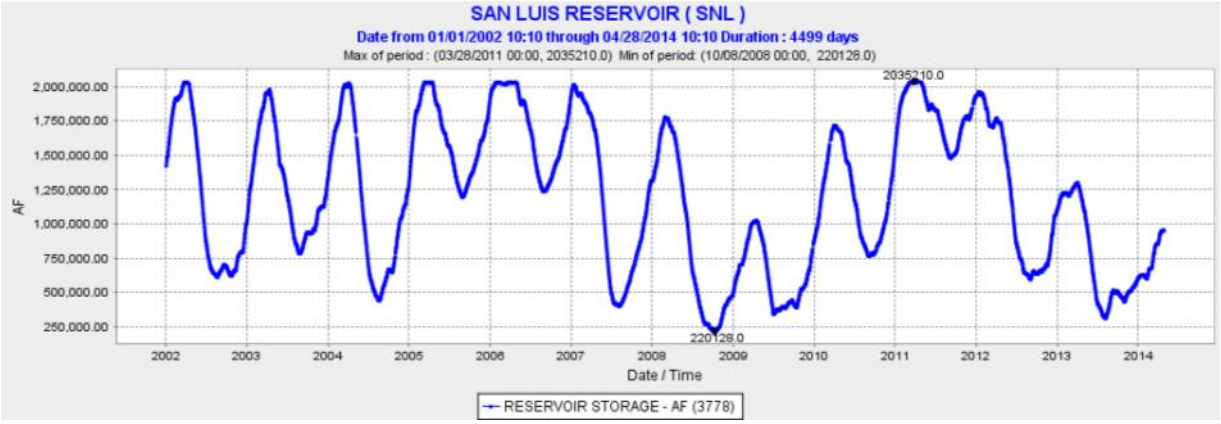
As of April 27th, federal storage was at 565,108AF, up 8,712AF, (58.52% full) and compares to 695,000AF one year ago. Total federal storage capacity is 965,655AF. The federal share of the reservoir is approximately 71% of the 15-year average of 799,000AF.

State Storage within San Luis Reservoir

As of April 27th, state storage was at 387,103AF, down 6,349AF, (now at 36.44% capacity). The total state storage capacity in SLR is 1,062,180AF. Total State and Federal storage reported is 952,211AF. The reservoir is at 47% of capacity.

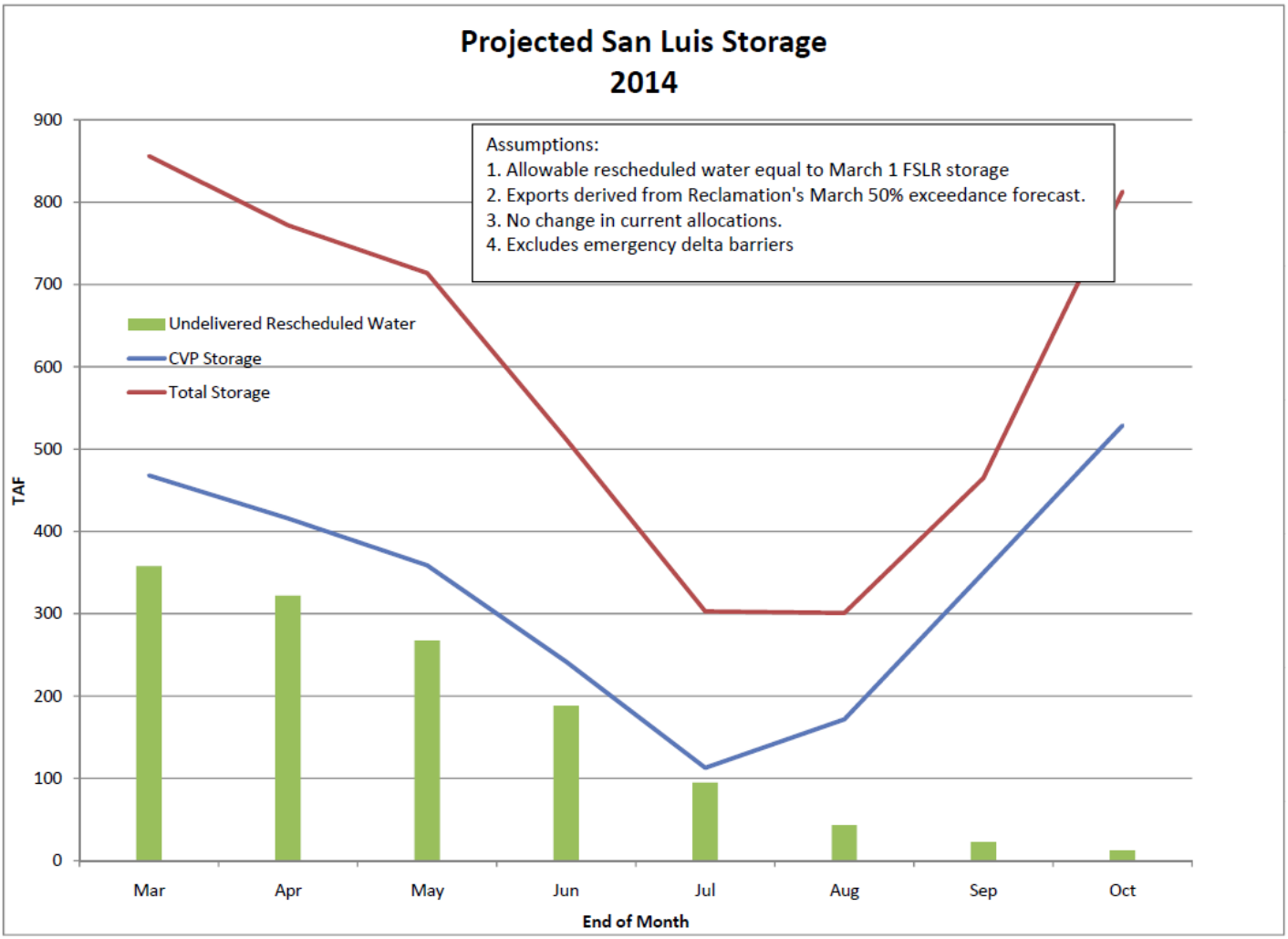


http://www.water.ca.gov/swp/operationscontrol/docs/storsanl.pdf



http://cdec.water.ca.gov/jspplot/jspPlotServlet.jsp?sensor_no=3778&end=04%2F21%2F2014+10%3A10&geom=huge&interval=4493&cookies=cdec01

Thankfully, San Luis Reservoir is at 952,211AF which is above where we expected it to be earlier this year.



T. Boardman, SLDMWA
4/9/2014

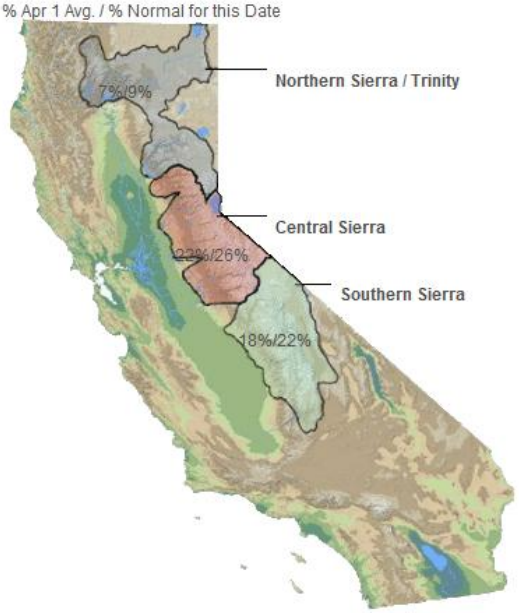
http://www.sldmwa.org/OHTDocs/pdf_documents/Tom%20Boardman/Apr14_fc.pdf

Snow Water Equivalents (inches)

Provided by the California Cooperative Snow Surveys

Data For: **28-Apr-2014**

% Apr 1 Avg. / % Normal for this Date



Change Date : 28-Apr-2014 Refresh Data

http://cdec.water.ca.gov/cdecapp/snowapp/sweq.action

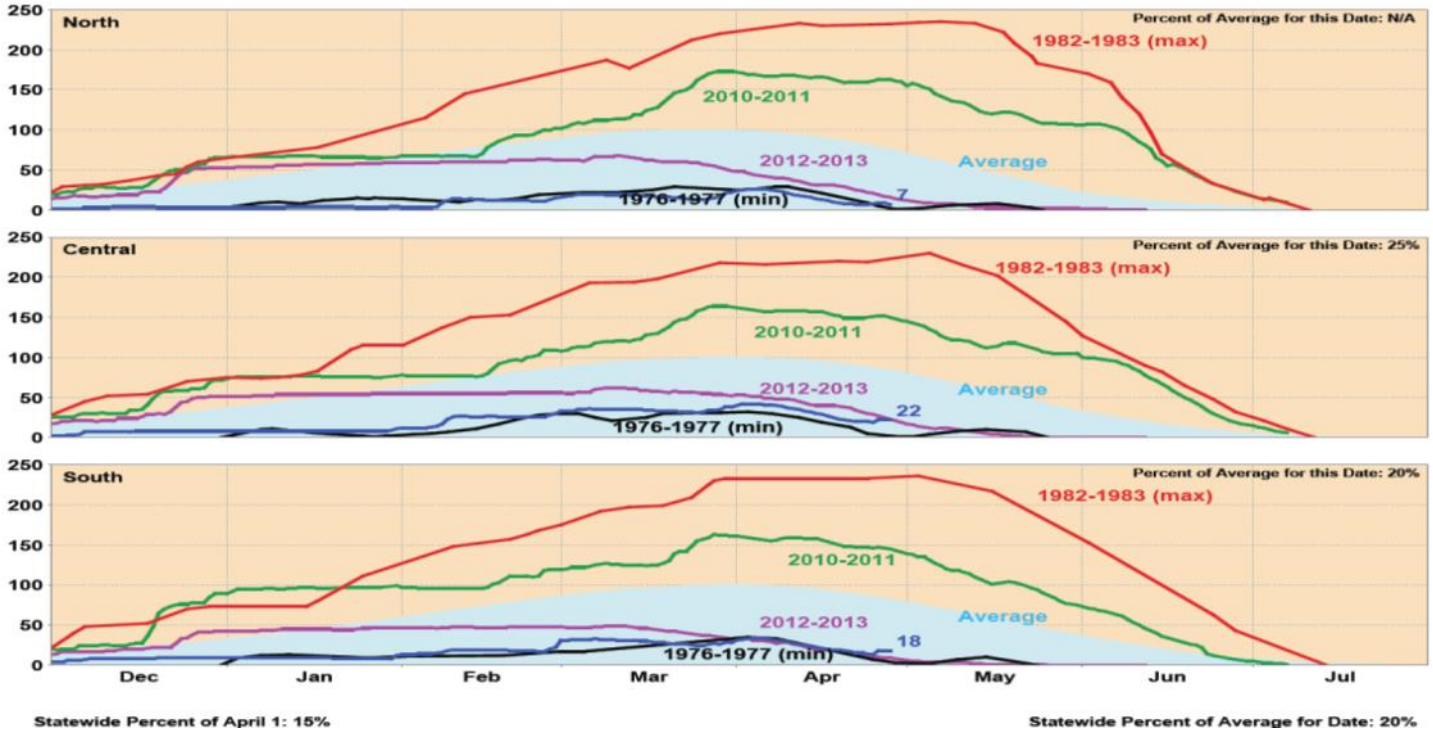
NORTH		
Data For: 28-Apr-2014		
Number of Stations Reporting	26	27 stations last week
Average snow water equivalent	1.9"	Down 0.3" snow water equivalent
Percent of April 1 Average	7%	
Percent of normal for this date	9%	Down 1%

CENTRAL		
Data For: 28-Apr-2014		
Number of Stations Reporting	42	42 stations last week
Average snow water equivalent	6.7"	Up 0.5" snow water equivalent
Percent of April 1 Average	22%	Up 1%
Percent of normal for this date	26%	Up 3%

SOUTH		
Data For: 28-Apr-2014		
Number of Stations Reporting	29	29 stations last week
Average snow water equivalent	4.6"	Up 0.3" snow water equivalent
Percent of April 1 Average	18%	Up 1%
Percent of normal for this date	22%	Up 3%

STATEWIDE SUMMARY		
Data For: 28-Apr-2014		
Number of Stations Reporting	97	98 stations last week
Average snow water equivalent	4.8"	Up 0.3" snow water equivalent
Percent of April 1 Average	17%	Up 1%
Percent of normal for this date	21%	Up 3%

California Snow Water Content, April 28, 2014, Percent of April 1 Average



Statewide Percent of April 1: 15%

Statewide Percent of Average for Date: 20%

http://cdec.water.ca.gov/cgi-progs/products/PLOT_SWC.pdf

10-Day Feather Basin Quantitative Precipitation Forecast (QPF)

Monday, April 28, 2014

(each day ends at 0400 PST)

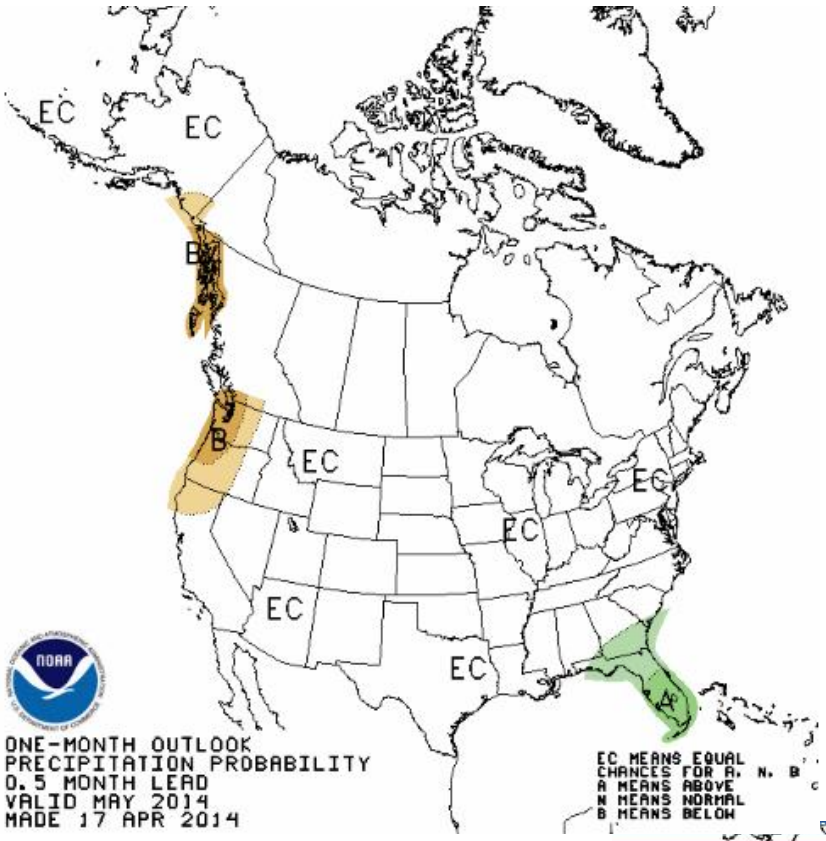
Day No.	Date		Precip (inches)	Snow Level (feet)	Average Daily* Precip (inches)	Snow Depth (inches)	Min Temp (F)
	Saturday, April 19, 2014		**0.0**	**9,500**			
	Sunday, April 20, 2014		**0.0**	**10,000**			
	Monday, April 21, 2014		**0.0**	**10,000**			
	Tuesday, April 22, 2014		**0.0**	**8,000**			
	Wednesday, April 23, 2014		**0.1**	**5,000**			
	Thursday, April 24, 2014		**0.0**	**7,000**			
	Friday, April 25, 2014	Actual	**0.3**	**7,000**			
	Saturday, April 26, 2014		**0.4**	**4,500**			
	Sunday, April 27, 2014		**0.0**	**5,000**			
	Monday, April 28, 2014		**0.0**	**6,000**	**0.08**	**0.0**	**33.2**
	Total observed:		**0.8**				
1	Tuesday, April 29, 2014		0.0	9,000	0.07	0.0	33.4
2	Wednesday, April 30, 2014		0.0	12,500	0.07	0.0	33.6
3	Thursday, May 01, 2014		0.0	13,000	0.07	0.0	33.7
4	Friday, May 02, 2014	Forecast	0.0	12,500	0.07	0.0	33.9
5	Saturday, May 03, 2014		0.0	12,500	0.07	0.0	34.1
6	Sunday, May 04, 2014		0.0	11,000	0.07	0.0	34.2
7	Monday, May 05, 2014		0.0	9,000	0.06	0.0	34.4
8	Tuesday, May 06, 2014		0.1	6,000	0.06	0.0	34.6
9	Wednesday, May 07, 2014		0.0	8,000	0.06	0.0	34.8
10	Thursday, May 08, 2014		0.0	9,000	0.06	0.0	34.9
	Friday, May 09, 2014		0.0	9,000	0.06	0.0	35.1
	10-Day Total:		**0.1**		**0.66**		
	10-Day Percent of Normal:		**15%**				
	Accumulated Observed Precip for WY 2014:		**32.5**	**(WY 2013: 50.5)**			

Comments:

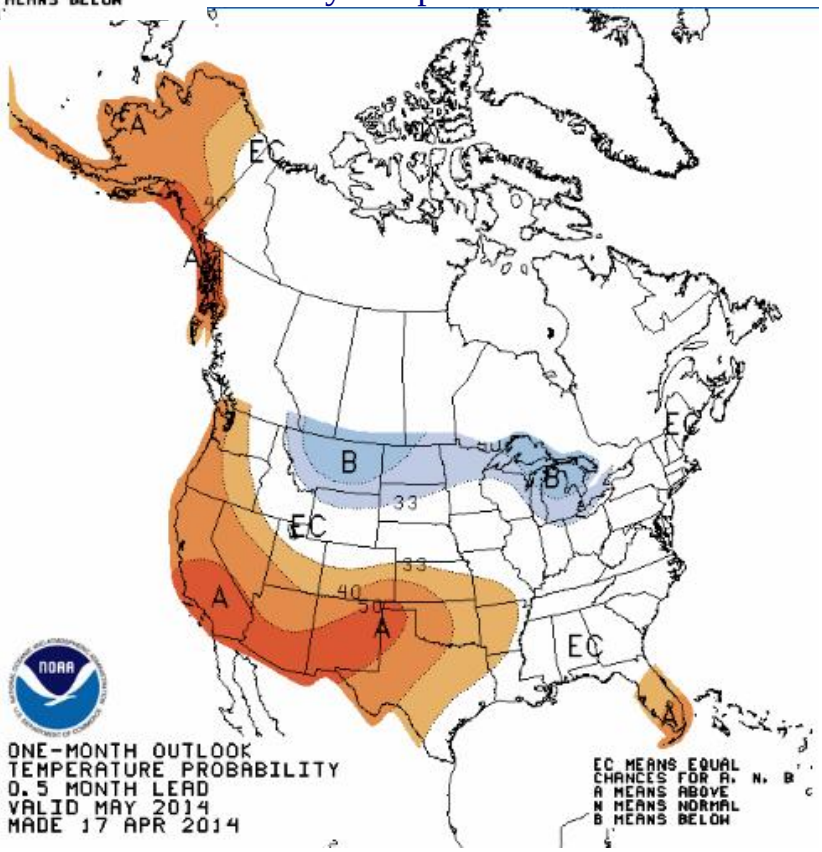
Dry and significantly above normal temperatures are forecasted this week for the Feather Basin. A cooling trend is expected over the weekend. The next update of this forecast will be about Monday, May 5, 2014, unless there are significant hydrologic changes.

http://cdec.water.ca.gov/cgi-progs/products/QPF.pdf

May Precipitation Forecast:

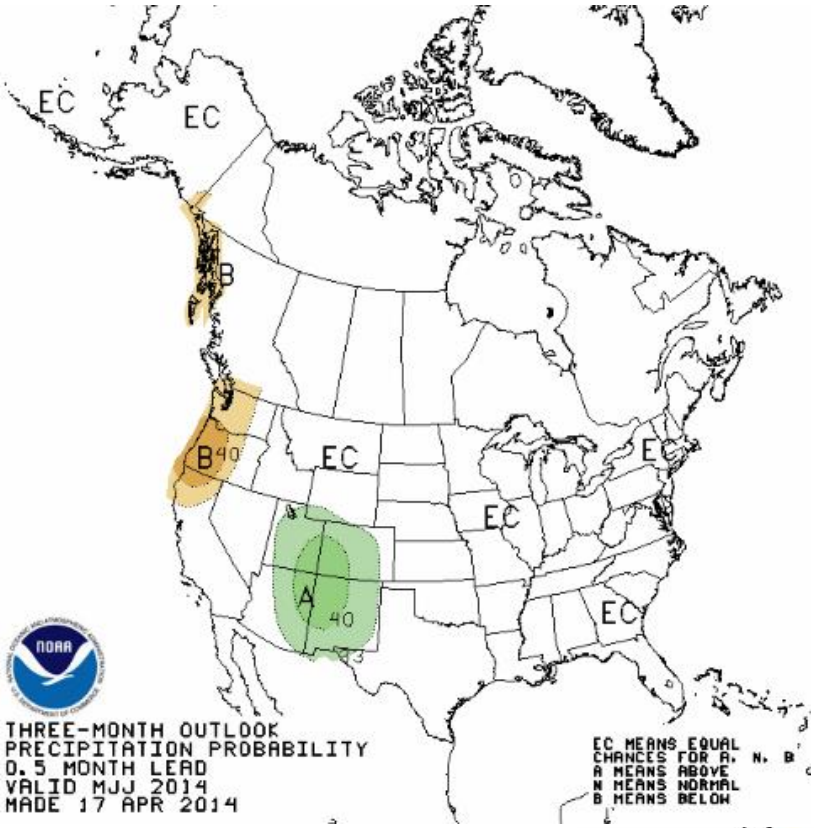


May Temperature Forecast:

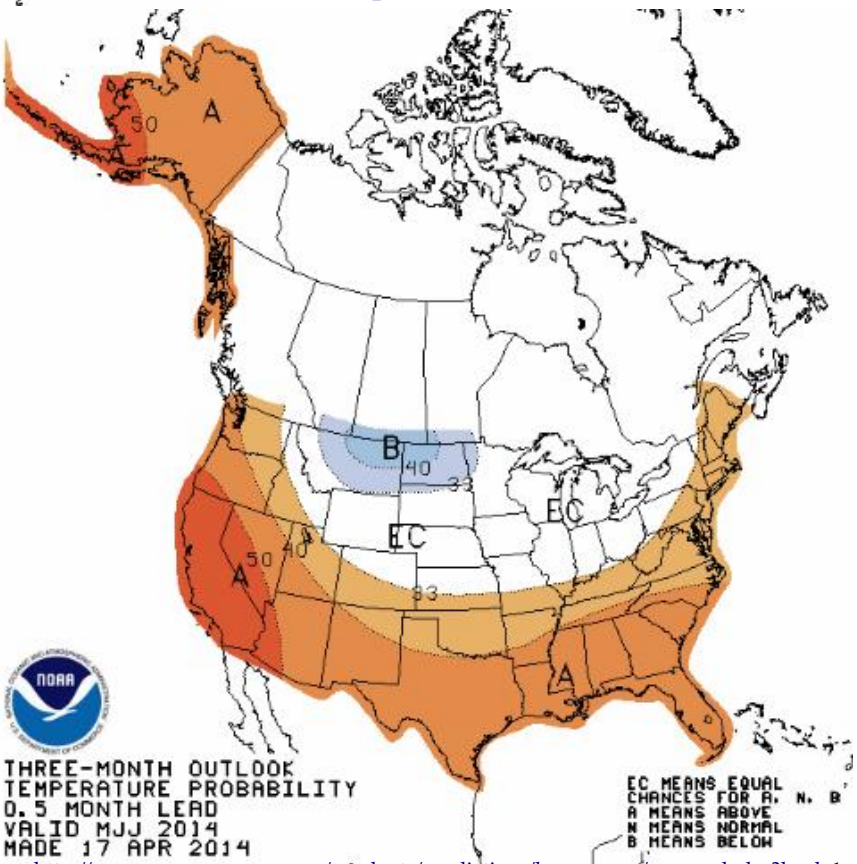


from http://www.cpc.ncep.noaa.gov/products/predictions/long_range/lead14/index.php

May – July Precipitation Forecast:



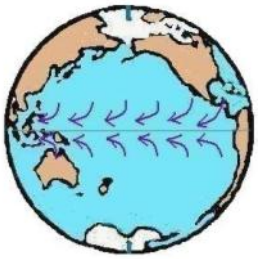
May to July Temperature Forecast:



from http://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=1

El Niños Explained

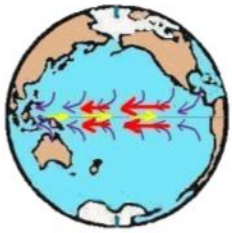
Bob Tisdale gives a helpful explanation of how El Niños come to be in his post of January 10, 2014: "An Illustrated Introduction to the Basic Processes that Drive El Niño and La Niña Events on the *Watts Up With That?* web-page (http://wattsupwiththat.com/2014/01/10/an-illustrated-introduction-to-the-basic-processes-that-drive-el-nino-and-la-nina-events/). Below are five of his illustrations to get you started:



THE TRADE WINDS BLOW ACROSS THE SURFACE OF THE TROPICAL PACIFIC, FROM THE NORTHEAST TO THE SOUTHWEST IN THE NORTHERN HEMISPHERE AND FROM THE SOUTHEAST TO THE NORTHWEST IN THE SOUTHERN HEMISPHERE.

Figure 1-3

OCEAN CURRENTS



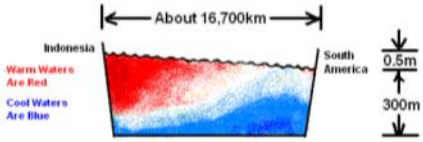
THE OCEAN CURRENTS IN THE TROPICAL PACIFIC ARE DRIVEN BY THE TRADE WINDS.

THE CURRENTS NEAR THE EQUATOR ARE CALLED THE NORTH AND SOUTH EQUATORIAL CURRENTS. THEY CARRY WATER FROM EAST TO WEST.

THERE'S ALSO A (NORMALLY) SMALLER CURRENT THAT RUNS BETWEEN THEM CALLED THE EQUATORIAL COUNTER CURRENT.

Figure 1-4 Bob Tisdale

INTRODUCTION TO THE CROSS SECTION OF THE EQUATORIAL PACIFIC OCEAN USED IN MANY OF THE GRAPHICS THAT FOLLOW



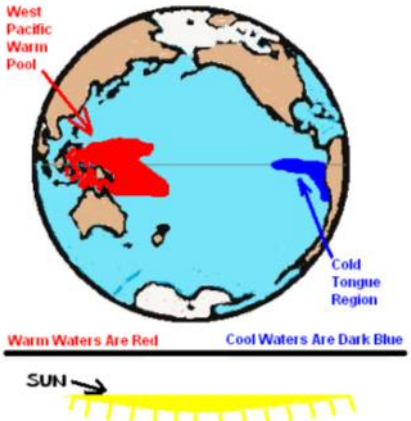
THE DIMENSIONS OF THE CROSS SECTION ARE SKEWED. BUT KNOWING THE SEA LEVEL IS ABOUT 0.5 METERS HIGHER IN THE WEST THAN IN THE EAST UNDER "NORMAL" CONDITIONS IS IMPORTANT.

THE VARIATIONS IN TEMPERATURES BELOW THE SURFACE ARE ALSO IMPORTANT, BUT THEY TAKE PLACE IN THE TOP 300 METERS.

AND THE OVERALL WIDTH OF THE TROPICAL PACIFIC MUST BE KEPT IN MIND--ALMOST HALFWAY AROUND THE GLOBE.

Figure 1-6 Bob Tisdale

NORMAL OR "ENSO-NEUTRAL" CONDITIONS (A)
(NOT AN EL NIÑO AND NOT A LA NIÑA)



THE TRADE WINDS PUSH THE SUN-WARMED WATER TO THE WEST AND IT ACCUMULATES IN AN AREA CALLED THE WEST PACIFIC WARM POOL, REACHING DEPTHS OF ALMOST 300 METERS.

THE TRADE WINDS ALSO DRAW COOL WATERS FROM BELOW THE SURFACE OF THE EASTERN EQUATORIAL PACIFIC IN A PROCESS KNOWN AS UPWELLING.

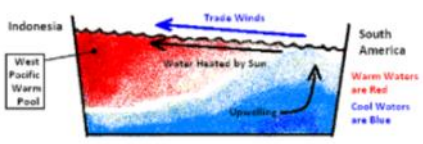
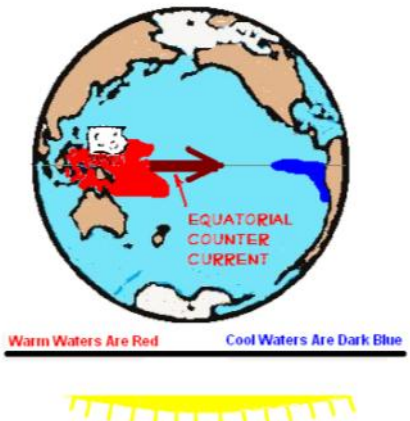


Figure 1-7 Bob Tisdale

WHAT DO YOU SUPPOSE HAPPENS WHEN THE TRADE WINDS DECIDE TO RELAX?



WHEN THE TRADE WINDS WEAKEN, GRAVITY TAKES OVER AND TRIES TO LEVEL THE SEA SURFACE HEIGHT OF THE EQUATORIAL PACIFIC.

THE EQUATORIAL COUNTER CURRENT GETS MUCH LARGER AND WARM WATER FROM THE PACIFIC WARM POOL SLOSHES TO THE EAST.

AND THAT'S HOW AN EL NIÑO STARTS!!!!

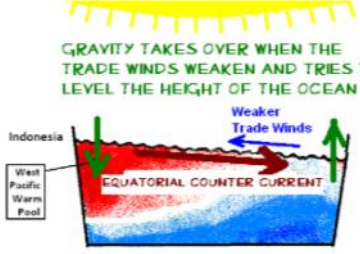


Figure 1-12 Bob Tisdale

***Disclaimer*: The information contained herein is compiled from a number of sources. Some of what we report is gleaned from news articles or meetings we attend. While we strive for this information to be accurate, it may be in error, and much of the information and data contained herein is provisional and subject to future revisions. If you plan on using this information to make business decisions about your water assets or needs, we strongly suggest that you do your own independent verification of the accuracy of this information. THE WATER AGENCY, INC. provides no guarantee as to the accuracy or completeness of the information. Neither THE WATER AGENCY, INC., nor any of the sources of the information contained herein are responsible for any errors or omissions, or for the use or results obtained from the use of this information. Please feel free to send us information or opinions, which are contrary to what we write, so we can try to integrate them into future updates.**

Erick H. Johnson
ErickHJ@WaterAgency.com
THE WATER AGENCY, INC.
Phone: (559) 438-8418
Fax: (559) 438-0480
2505 Alluvial Avenue, Clovis, CA 93611

(Northwest corner of Temperance & Alluvial)