



California's Water Year 2017 – From Drought to Record Wet

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Water Year 2017 – When it Rains, it Pours

- Running 3 simultaneous emergencies at CDWR this winter – drought, flood, Oroville Dam spillway
- Reaching key initial milestone in Sustainable Groundwater Management Act (SGMA) implementation
- California Water Fix key milestones, in coordination with California EcoRestore

Where We've Been Prior to Water Year 2017

- 2007 – dry
- 2008 – dry
- 2009 – dry
- 2010 – normal
- 2011 – wet
- 2012 – dry
- 2013 – dry
- 2014 – dry
- 2015 – dry
- 2016 – dry to normal, location-specific



2012-16 Drought – State Response Actions

- May 2013 Executive Order on water transfers
- Dec 2013 formation of Governor’s Drought Task Force
- Jan 2014 Governor’s emergency proclamation
- March 2014 drought relief legislation
- April 2014 proclamation of continued state of emergency
- Sep 2014 Executive Order for emergency drinking water assistance
- Dec 2014 Executive Order continuing CEQA waiver for specified actions
- March 2015 drought relief legislation
- April 2015 Executive Order
- October 2015 emergency proclamation on tree mortality
- November 2015 Executive Order, continuing conservation/small water systems
- May 2016 Executive Order, conservation requirements
- April 2017 Executive Order, ending statewide drought emergency & calling for continued response to lingering impacts



Driest 4 Consecutive Water Years Based on Statewide Precipitation

Year	4-Year Total, inches
2012-2015	62.2
1917-1920	63.1
1923-1926	63.3
1928-1931	64.5
1931-1934	65.1
1921-1924	65.7
1922-1925	65.9
1918-1921	66.8
1929-1932	67.3
1987-1990	67.3
1930-1933	68.0

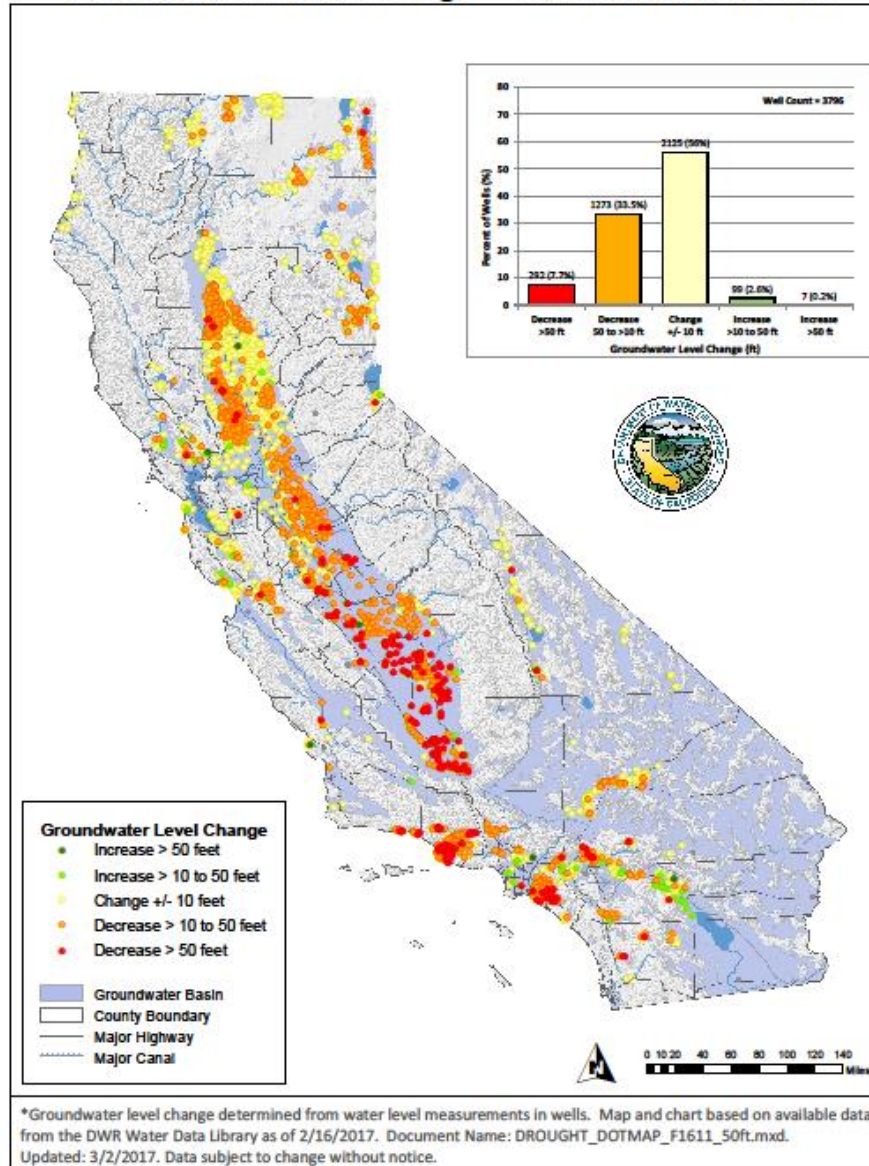
WRCC data

USGS Computed CA WY Runoff

Dozen Driest years -- (rank out of 115)

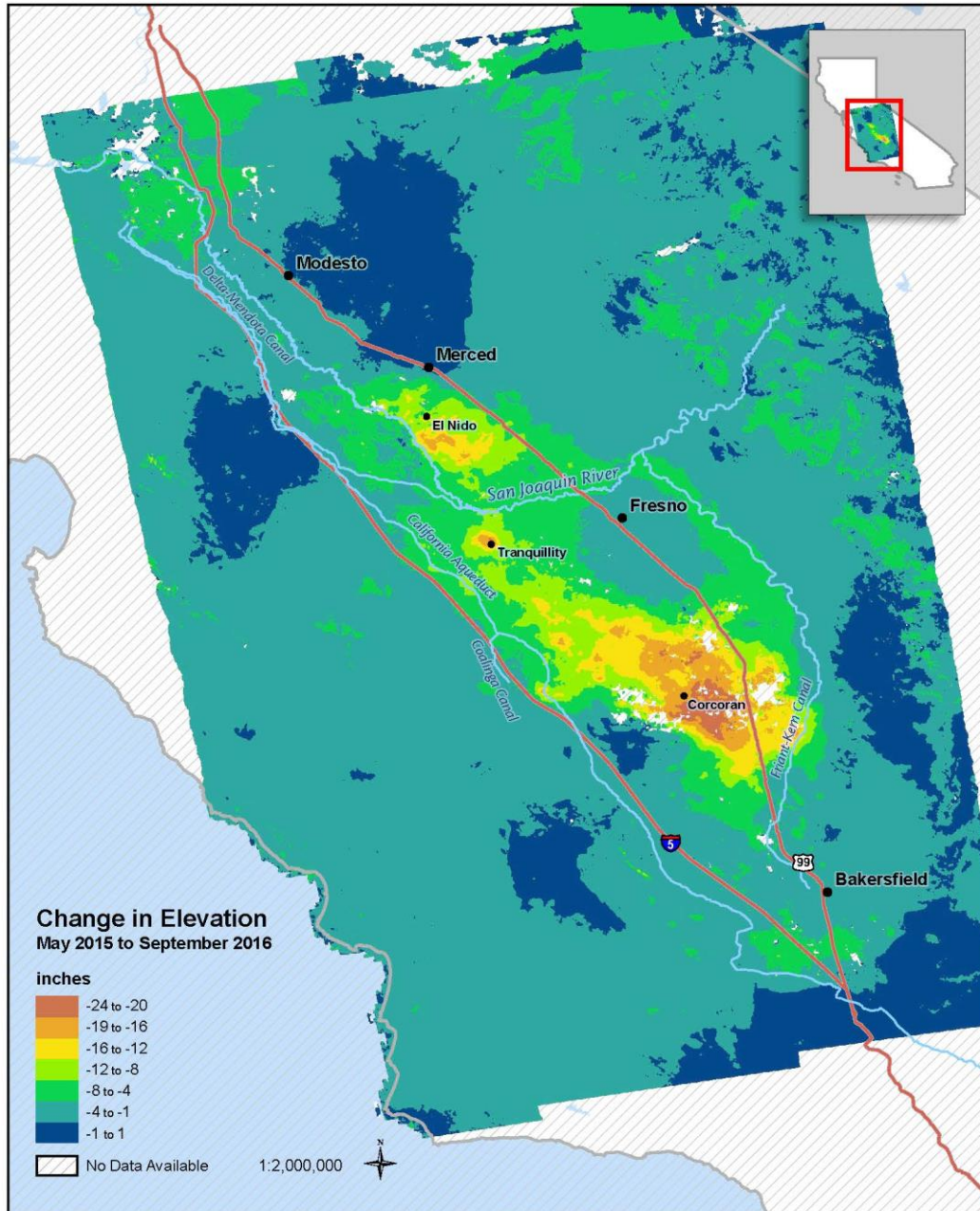
1. 1977	115 th	7. 1990	109 th
2. 1931	114 th	8. 2015	108 th
3. 1924	113 th	9. 2001	107 th
4. 2014	112 th	10. 1934	106 th
5. 1991	111 th	11. 1992	105 th
6. 1994	110 th	12. 1976	104 th

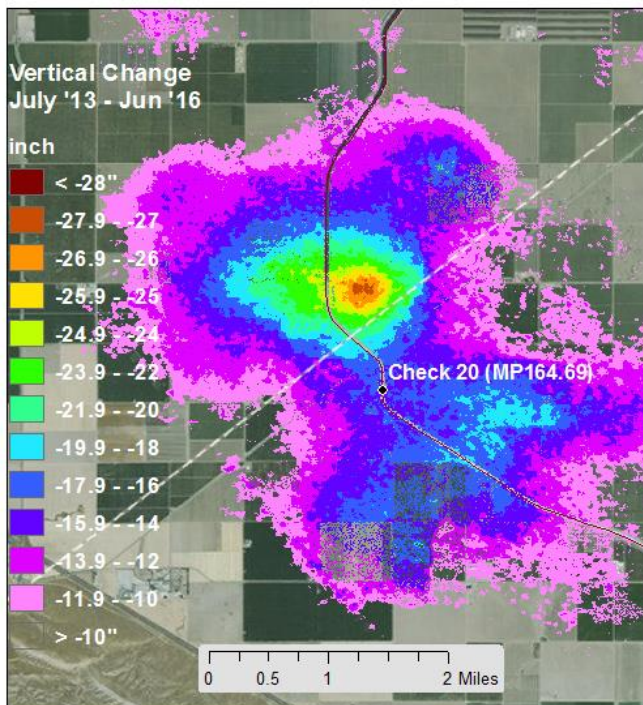
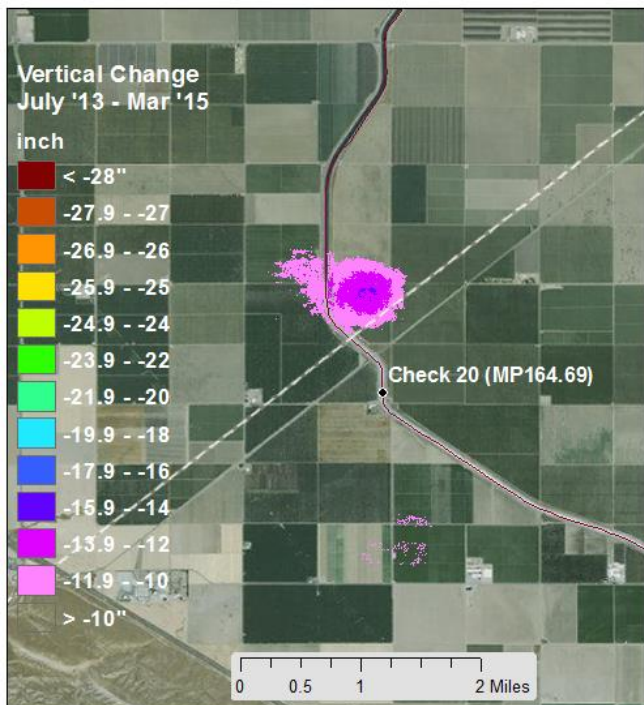
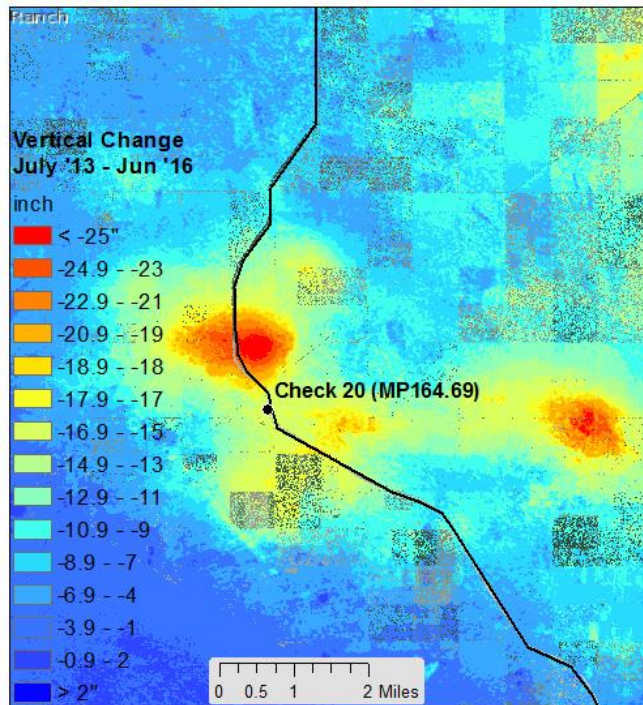
Groundwater Level Change* - Fall 2011 to Fall 2016



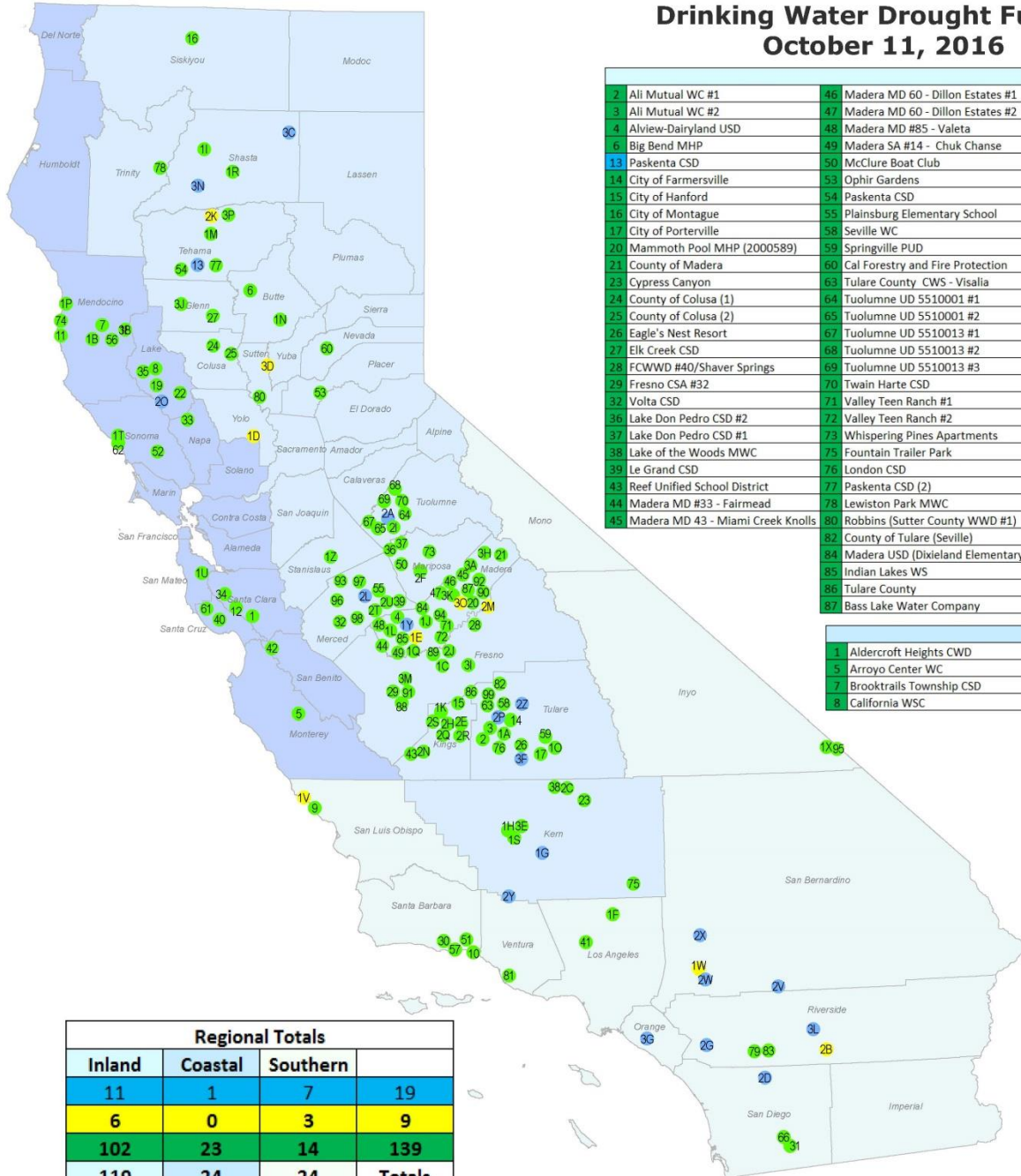
San Joaquin Valley Land Subsidence, May 2015 – September 2016

InSAR Data from Sentinel Satellite Mission, Processed by NASA JPL





California State Water Resources Control Board Drinking Water Drought Funding October 11, 2016



Inland			
2	Alli Mutual WC #1	46	Madera MD 60 - Dillon Estates #1
3	Alli Mutual WC #2	47	Madera MD 60 - Dillon Estates #2
4	Alview-Dairyland USD	48	Madera MD #85 - Valeta
6	Big Bend MHP	49	Madera SA #14 - Chuk Chanse
13	Paskenta CSD	50	McClure Boat Club
14	City of Farmersville	53	Ophir Gardens
15	City of Hanford	54	Paskenta CSD
16	City of Montague	55	Plainsburg Elementary School
17	City of Porterville	58	Seville WC
20	Mammoth Pool MHP (2000589)	59	Springville PUD
21	County of Madera	60	Cal Forestry and Fire Protection
23	Cypress Canyon	63	Tulare County CWS - Visalia
24	County of Colusa (1)	64	Tuolumne UD 5510001 #1
25	County of Colusa (2)	65	Tuolumne UD 5510001 #2
26	Eagle's Nest Resort	67	Tuolumne UD 5510013 #1
27	Elk Creek CSD	68	Tuolumne UD 5510013 #2
28	FCWWD #40/Shaver Springs	69	Tuolumne UD 5510013 #3
29	Fresno CSA #32	70	Twain Harte CSD
32	Volta CSD	71	Valley Teen Ranch #1
36	Lake Don Pedro CSD #2	72	Valley Teen Ranch #2
37	Lake Don Pedro CSD #1	73	Whispering Pines Apartments
38	Lake of the Woods MWC	75	Fountain Trailer Park
39	Le Grand CSD	76	London CSD
43	Reef Unified School District	77	Paskenta CSD (2)
44	Madera MD #33 - Fairmead	78	Lewiston Park MWC
45	Madera MD 43 - Miami Creek Knolls	80	Robbins (Sutter County WWD #1)
		82	County of Tulare (Seville)
		84	Madera USD (Dixieland Elementary)
		85	Indian Lakes WS
		86	Tulare County
		87	Bass Lake Water Company
		88	Cantua Creek CSA 32
		89	Central High School
		90	Lake Shore - MD-6
		91	El Porvenir CSA 30
		92	Marina View Heights - MD-7
		93	City of Livingston
		94	Valley Teen Ranch (3)
		96	Hillview WC - Oakhurst/Sierra Lakes
		97	Hillview WC - Raymond
		98	Hillview WC - Raymond (2)
		99	Monson
		1A	East Porterville
		1C	Perry Colony & West Church Avenue
		1D	Davis Joint Unified School District
		1E	Madera Co. MD-24 Teaford Meadows
		1G	RCAC (Arvin)
		1H	Rio Bravo-Greenly Union School
		1I	Lake Shasta Pines RV Park
		1J	Sierra View Elementary School
		1K	Hardwick
		1L	Dairyland School
		1M	Antelope Homewood MH Park
		1N	Feather Falls School
		1O	Central MWC
		1P	Chuk Chanse (CSA-14)
		1R	Oak Run Elementary School
		1S	Lakeside Union School
		1Y	Sierra View Elementary School II
		2A	Self Help Ent-Monterey Park Tract
		2B	Jamestown/Quartz Hill/ Stent Area (2)
		2C	Linns Valley School District
		2E	Hardwick Water System
		2F	Cathy's Valley School
		2K	Reeds Creek School
		2H	Kings County for the Hardwick WS
		2I	Jamestown/Quartz Hill/ Stent Area (1)
		2J	Adkins Rentals Water System
		2L	Plainsburg Elementary School (2)
		2M	Madera Maint. Dist. BA North Fork
		2N	Kettleman City CSD
		2P	Okleville Highland Acres MWC
		2Q	Linns Valley School District
		2R	Hardwick-Water System
		2S	Jamestown
		2T	Plainsburg
		2U	El Porvenir
		2Y	Peak to Peak Mountain Charter School
		2Z	Lemon Cove Emergency Bottled Water
		3A	Bonadelle Ranchos MWC
		3B	Potter Valley School District
		3C	Fall River Valley CSD
		3D	Barry Elementary School
		3E	Cypress Canyon
		3F	Saucelito Elementary School POU
		3H	Golden Valley Unified School
		3I	Sanger Unified School District
		3J	Grindstone Indian Rancheria
		3K	Madera County MD-36 Eastin Arcola WS
		3M	City of San Joaquin
		3N	Colusa Water Works District 1- Grimes
		3O	Sierra Linda Mutual Water Co.
		3P	Gurnsey Avenue Water System

Coastal			
1	Aldercroft Heights CWD	11	Caspar South SC
5	Arroyo Center WC	12	Chemeketa Park MWC
7	Brooktrails Township CSD	18	City of Willits
8	California WSC	19	Clearwater MWC
		22	Crescent Bay IC
		33	Lake Berryessa Resort ID
		34	Lake Canyon MWC
		35	Lake County SA #22 - Mt. Hannah
		40	Lompico County WD
		42	Los Madrones MWC
		52	Mt Taylor MHP
		56	Redwood Valley CWD
		61	Summit MWC
		62	Timber Cove CWD
		74	Woodside RV Park
		1B	Sherwood Valley Rancheria
		1P	Fort Bragg
		1T	Huckleberry MWC
		1U	Skyllonda MWC
		2O	Cobb Area County Water District

Southern			
9	Cambria CSD	1F	Village Mobile Home Park
10	Carpinteria Valley WD	1V	San Simeon CSD
30	Goleta WD	1W	Cedarpines MWC
31	Guatay MBC	1X	Inyo County (Tecopa)
41	Los Angeles Residential CF	2B	Shady Lane MH Park - Rancho Garcia
51	Montecito WD	2D	Warner Springs Unified School District
57	Santa Barbara WD	2G	Self-Help Enterprises for Pond MWC
66	Guatay MBC (2)	2V	Little Morongo CSA 70 F
79	Western Water Conservation-Ramona	2W	Hacienda Heights CAS
81	Cloverdale MWC	2X	Pioneertown CSA 70 W-4
83	Western Water Con. (Ramona Well 3)	3G	Shady Lane Mobilehome Park Inc.
95	Amargosa Conservancy - Tecopa	3L	Indio Water Authority

Regional Totals			
Inland	Coastal	Southern	
11	1	7	19
6	0	3	9
102	23	14	139
119	24	24	Totals

Funding Status

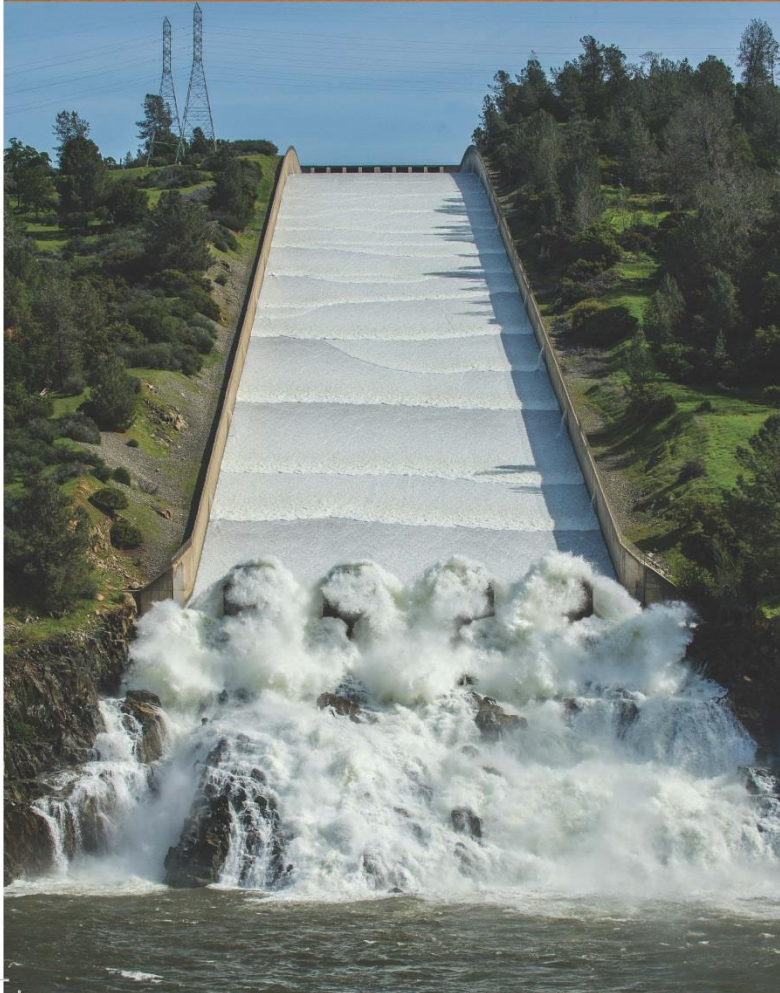
- Application Received
- Approved For Funding
- Issued/Executed Agreements

County Area

- Coastal
- Inland
- Southern

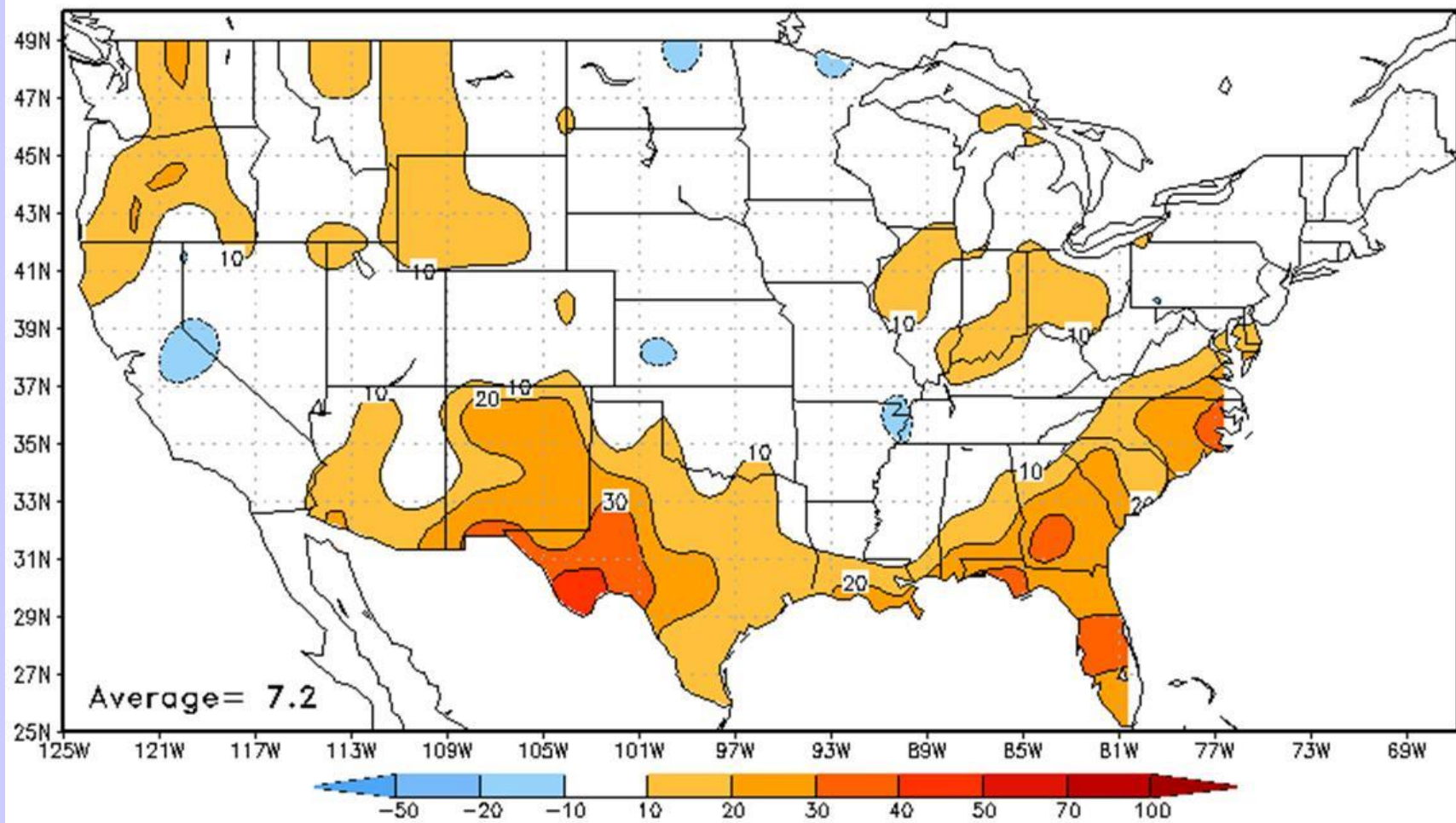


Improving
Sub-Seasonal to Seasonal
Precipitation Forecasting for
Water Management



WESTERN
STATES
WATER
COUNCIL

Seasonal (Lead 0.5 Months) Precipitation Heidke Skill Score DJF Manual Forecasts From 1995 to 2016



Distribution of Landfalling Atmospheric Rivers on the U.S. West Coast (From 1 Oct 2016 to 12 April 2017)

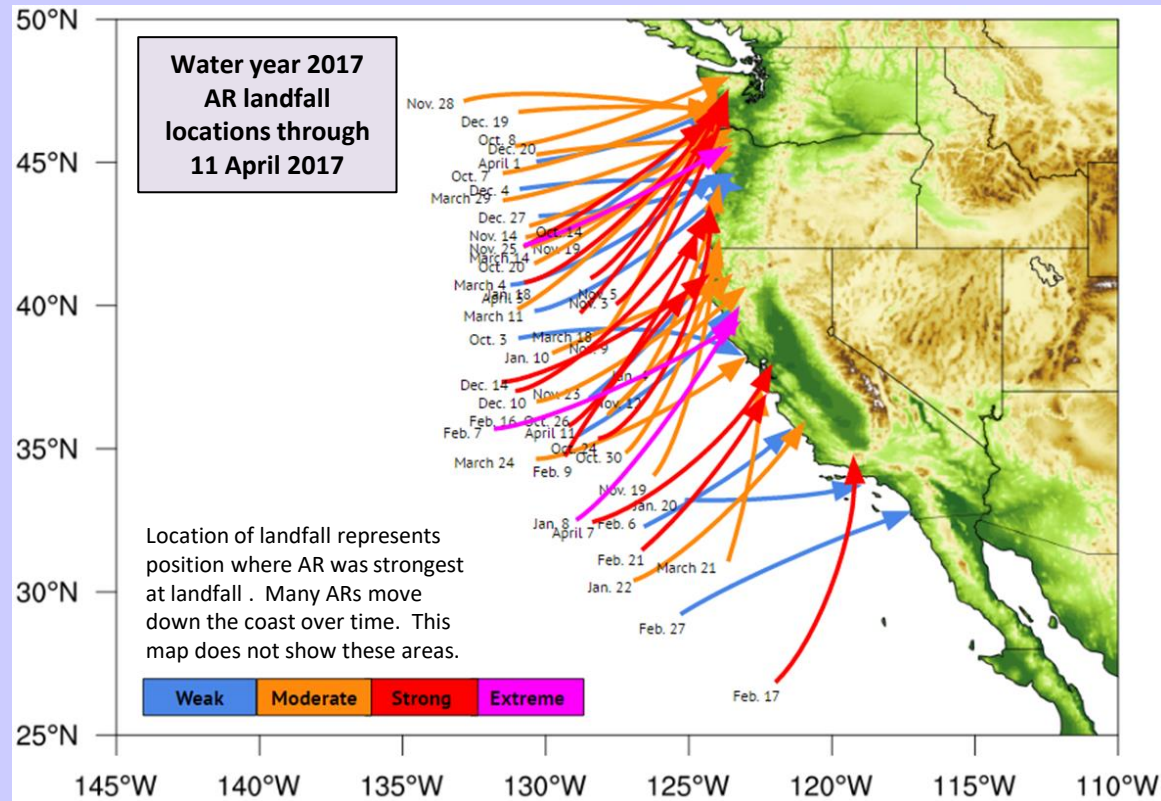
AR Strength	AR Count*
Weak	12
Moderate	21
Strong	13
Extreme	3

- 49 Atmospheric Rivers have made landfall on the West Coast thus far during the 2017 water year (1 Oct. – 12 April 2017)
- This is much greater than normal
- 1/3 of the landfalling ARs have been “strong” or “extreme”

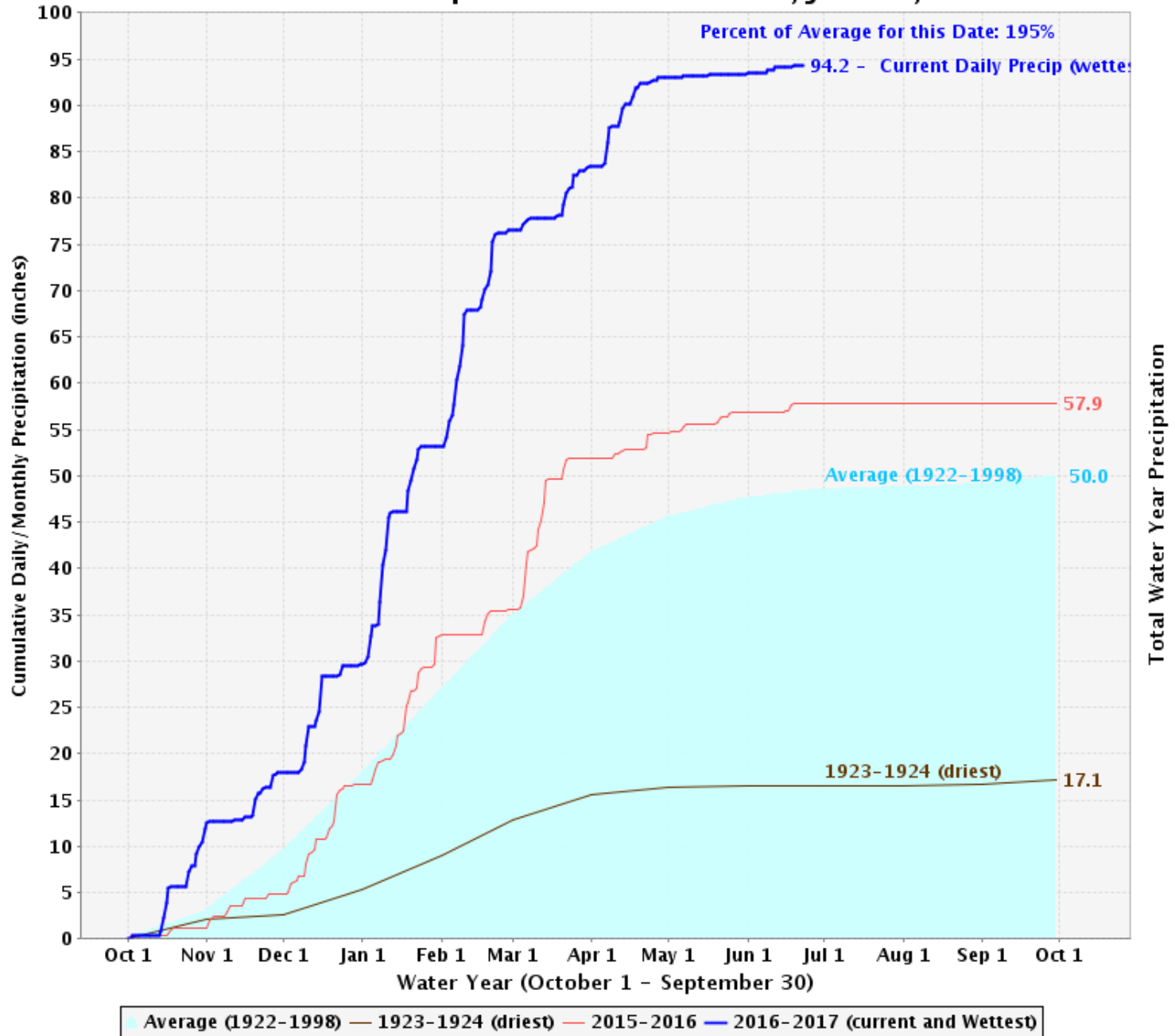
Ralph/CW3E AR Strength Scale

■ Weak: $IVT=250-500 \text{ kg m}^{-1} \text{ s}^{-1}$
■ Moderate: $IVT=500-750 \text{ kg m}^{-1} \text{ s}^{-1}$
■ Strong: $IVT=750-1000 \text{ kg m}^{-1} \text{ s}^{-1}$
■ Extreme: $IVT>1000 \text{ kg m}^{-1} \text{ s}^{-1}$

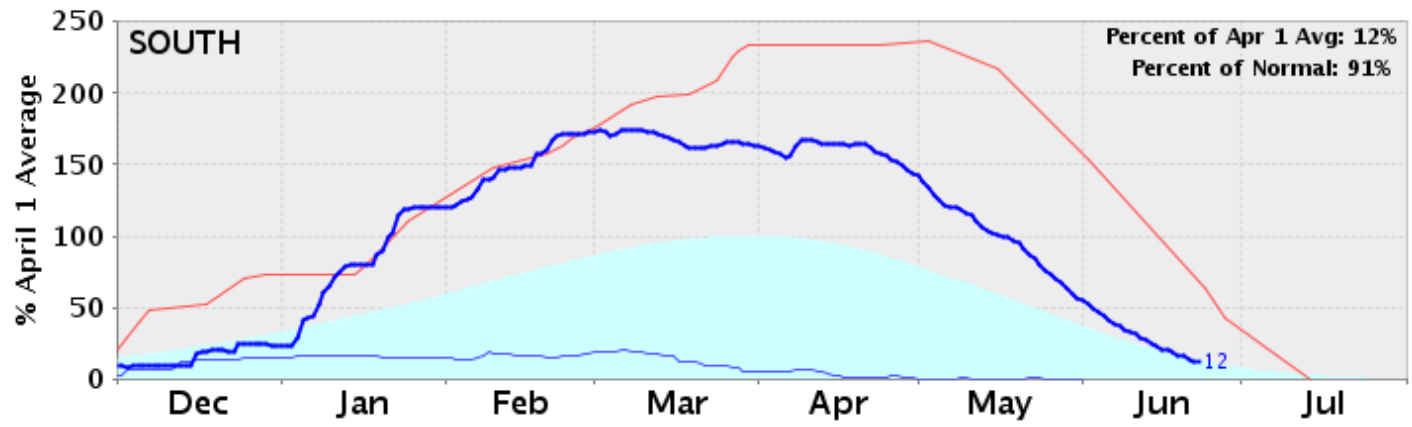
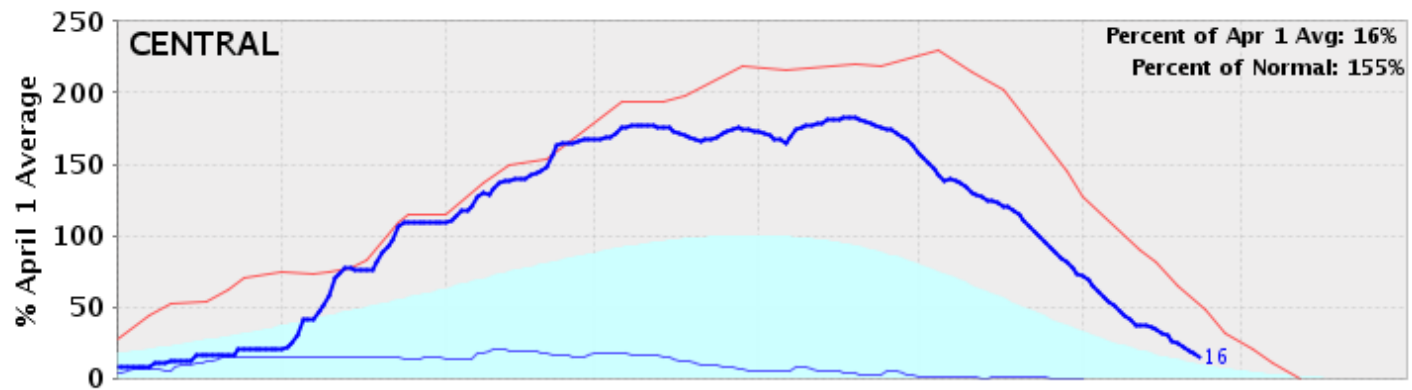
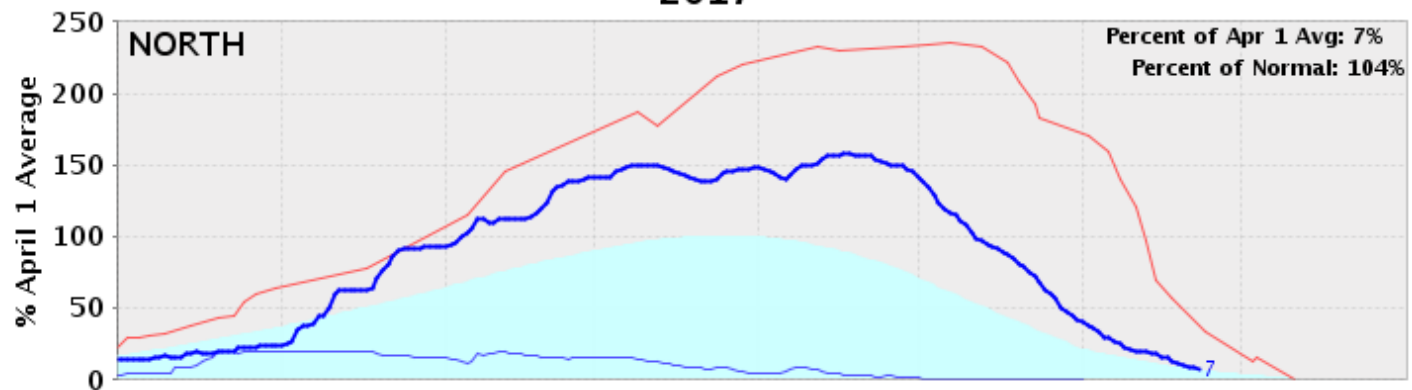
*Radiosondes at Bodega Bay, CA indicated the 10–11 Jan AR was strong (noted as moderate based on GFS analysis data) and 7–8 Feb AR was extreme (noted as strong)



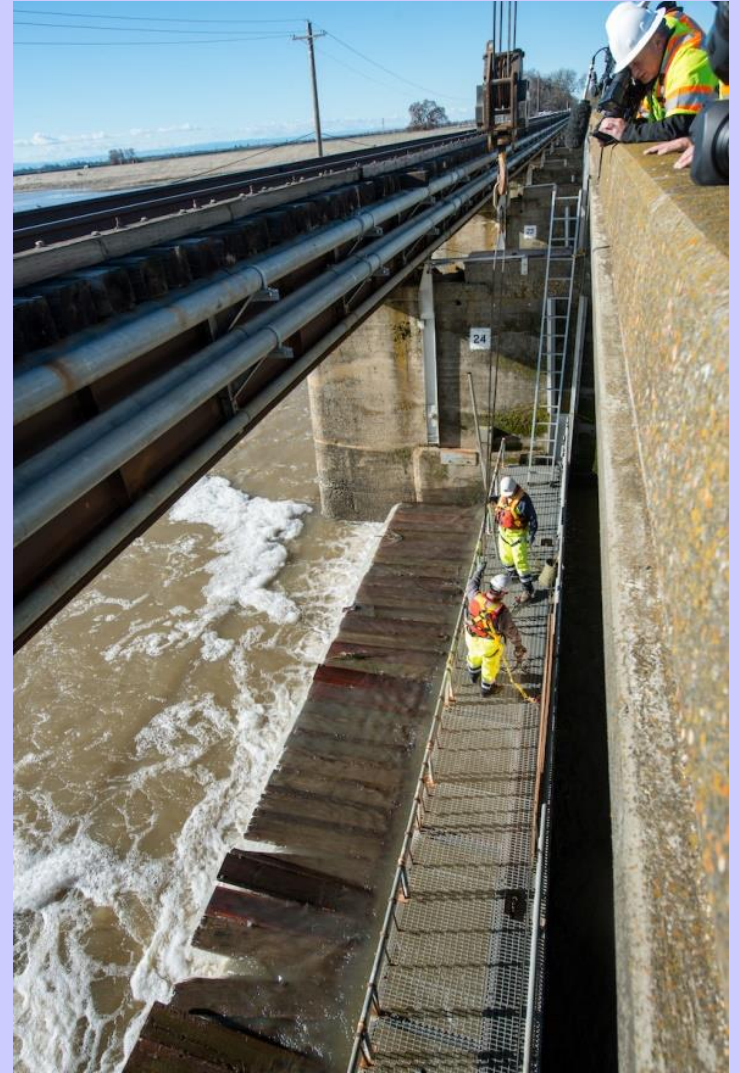
Northern Sierra Precipitation: 8-Station Index, June 23, 2017



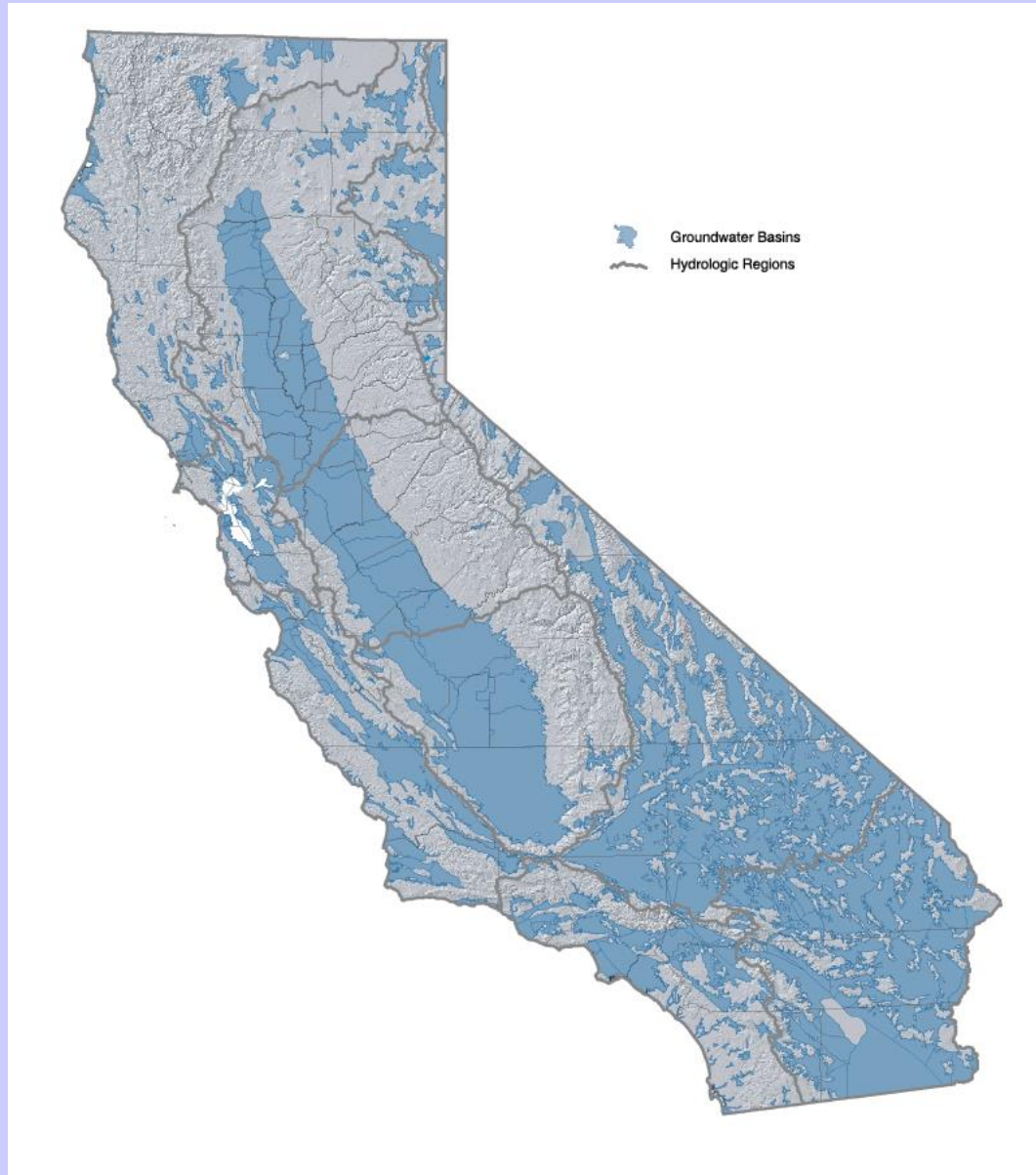
California Snow Water Content - Percent of April 1 Average For: 23-Jun-2017



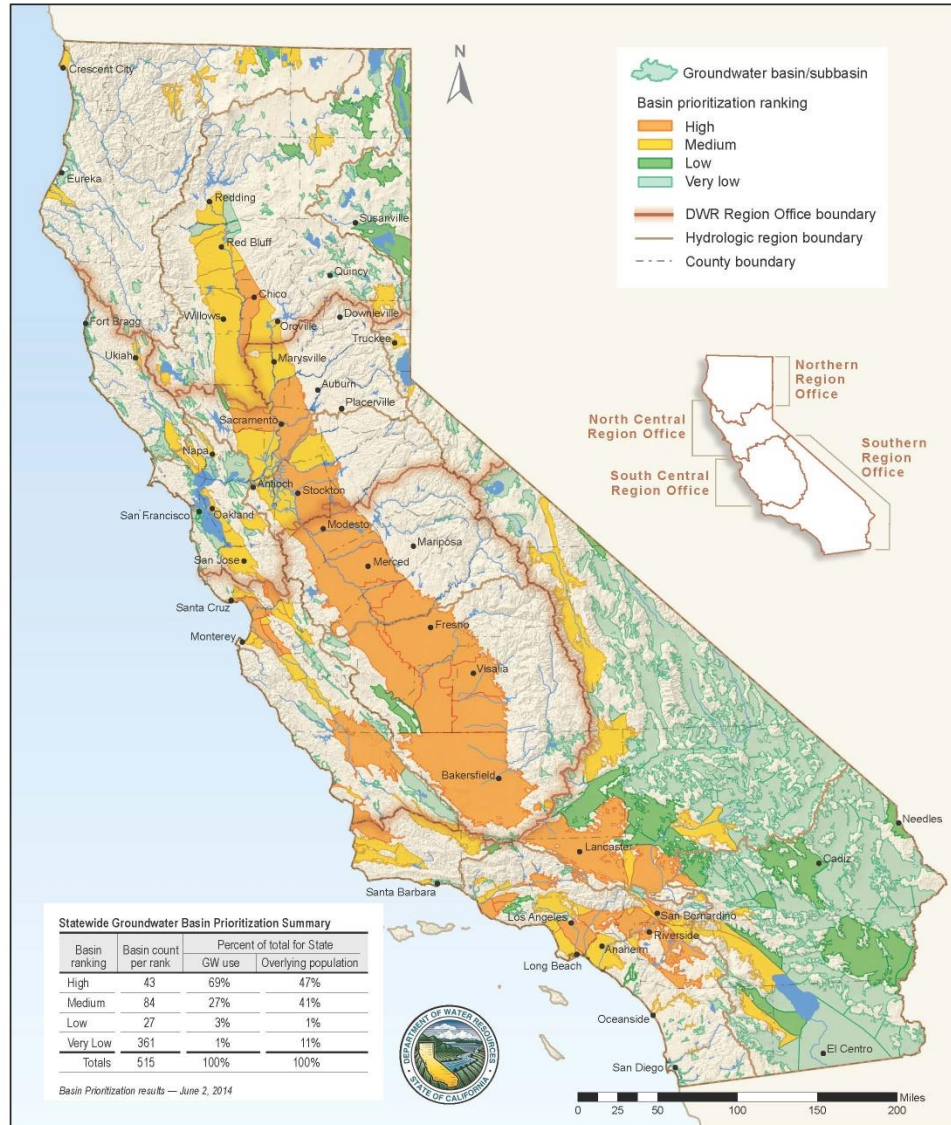
Average — 1982-1983 (max) — 2014-2015 (min) — 2016-2017 (current)



California Groundwater Basins, DWR Bulletin 118

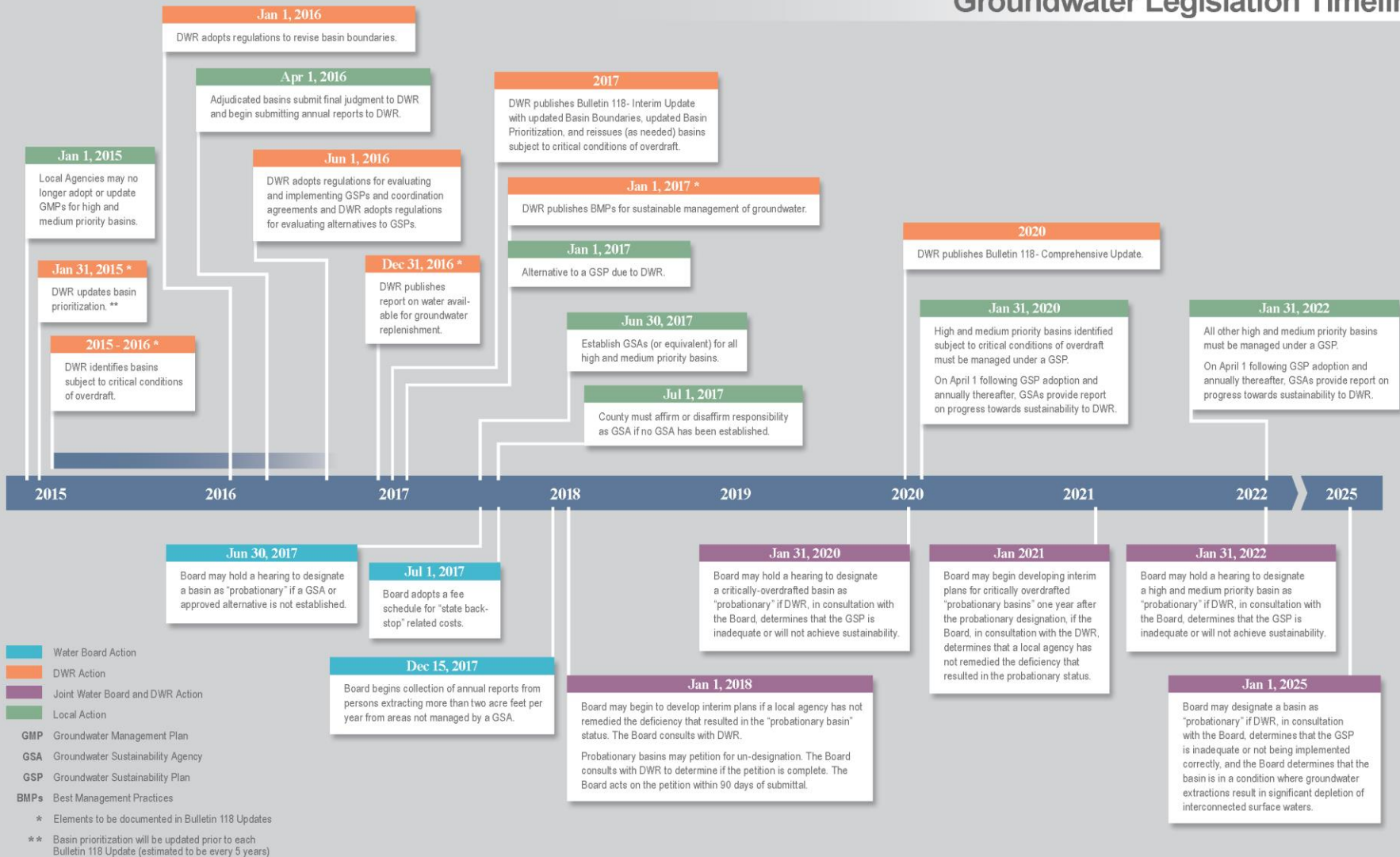


CASGEM Groundwater Basin Prioritization



Sustainable Groundwater Management Act

Groundwater Legislation Timeline



SGMA Legislative Intent

- To establish minimum management standards
- To provide local groundwater agencies with the authority & necessary technical & financial assistance
- To avoid or minimize subsidence
- To improve data collection
- To increase groundwater storage
- To manage groundwater basins through actions of local governmental agencies while minimizing state intervention

State's Role in Building Regional Capacity

“A central feature of SGMA is the recognition that groundwater management in California is best accomplished locally.”

Governor Jerry Brown, September 2014



Statewide Planning (CA Water Plan [B-160], B-118, etc.)

Regional Planning Assistance
(Facilitation, GSA/Governance Support)

Technical Assistance

(Statewide Datasets, Analysis, and Tools; Best Management Practices; Water Available for Replenishment Report)

Financial Assistance

(Proposition 1)

Facilitation/Advisory Role

DWR

**Evaluation
of GSPs**

**State Water
Board**

Enforcement

Evaluation/Regulatory Role

SGMA Key Milestone Approaching

- June 30th!
- And July 1st !
- Will hear Sonoma County Water Agency's local perspective on Groundwater Sustainability Agency formation in next talk

