RECLAMATION
Managing Water in the West

U.S. Department of the Interior
Bureau of Reclamation

Sacramento River Temperature Task Group Meeting

January 16, 2018

UPDATE

- Hydrology & Operations update (information is available on web-pages)
  - Daily Operation
  - Summary
  - 8-Station Index and Snow Water Content
  - Operations Outlook
  - Mean Daily Water Temperatures
  - Redding 10-Day Forecasted Air Temperatures
  - Sac River Gage temp plot and air temp plot
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UNITED STATES DEPARTMENT OF THE INTERIOR
U.S. BUREAU OF RECLAMATION-CENTRAL VALLEY PROJECT-CALIFORNIA

DAILY CVP WATER SUPPLY REPORT

JANUARY 15, 2019

RUN DATE: January 16, 2019

RESERVOIR RELEASES IN CUBIC FEET/SECOND

RESERVOIR	DAM	WY 2018	WY 2019	15 YR MEDIAN
TRINITY	LEWISTON	299	300	301
SACRAMENTO	KESWICK	3,557	3,660	3,722
FEATHER	OROVILLE (SWP)	1,750	1,750	1,750
AMERICAN	NIMBUS	2,655	1,764	1,699
STANISLAUS	GOODWIN	1,438	205	282
SAN JOAQUIN	FRIANT	385	395	151

STORAGE IN MAJOR RESERVOIRS IN THOUSANDS OF ACRE-FEET

RESERVOIR	CAPACITY	15 YR AVG	WY 2018	WY 2019	% OF 15 YR AVG
TRINITY	2,448	1,431	1,758	1,491	104
SHASTA	4,552	2,613	3,261	2,471	95
FOLSOM	977	389	577	338	87
NEW MELONES	2,420	1,387	1,987	1,812	131
FED. SAN LUIS	966	620	960	713	115
TOTAL NORTH CVP	11,363	6,439	8,543	6,825	106
MILLERTON	520	290	357	302	104
OROVILLE (SWP)	3,538	1,794	1,299	1,090	61

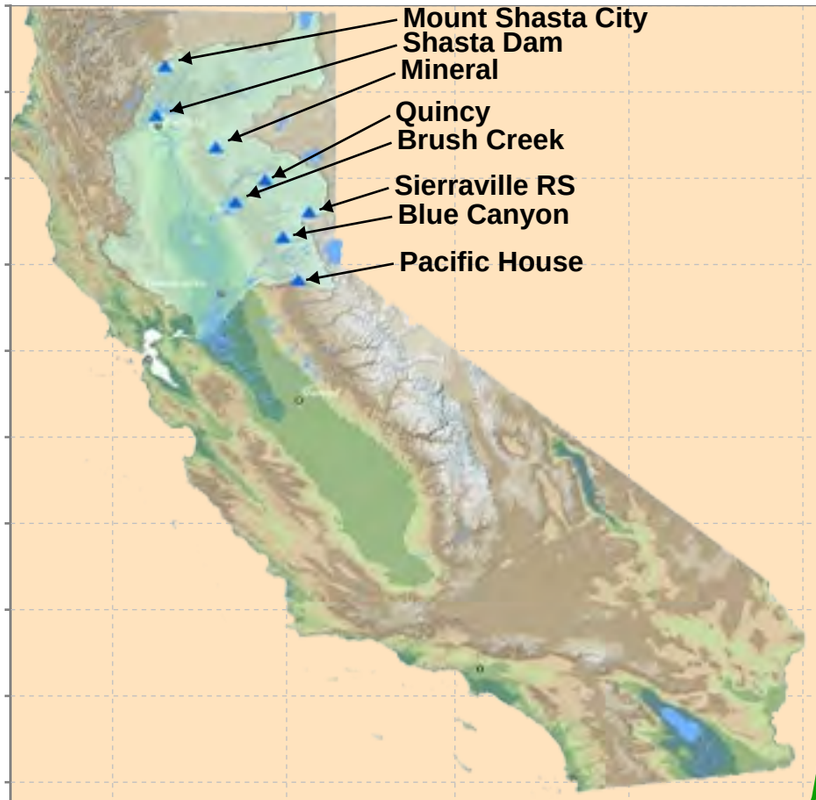
ACCUMULATED INFLOW FOR WATER YEAR TO DATE IN THOUSANDS OF ACRE-FEET

RESERVOIR	CURRENT WY 2019	WY 1977	WY 1983	15 YR AVG	% OF 15 YR AVG
TRINITY	108	35	290	204	53
SHASTA	1,002	812	1,680	1,274	79
FOLSOM	289	131	1,226	546	53
NEW MELONES	130	----	430	196	66
MILLERTON	195	76	600	202	97

ACCUMULATED PRECIPITATION FOR WATER YEAR TO DATE IN INCHES

RESERVOIR	CURRENT WY 2019	WY 1977	WY 1983	AVG (N YRS)	% OF AVG	LAST 24 HRS
TRINITY AT FISH HATCHERY	12.53	4.40	19.16	15.27 (57)	82	0.25
SACRAMENTO AT SHASTA DAM	24.87	5.34	30.17	27.09 (62)	92	0.18
AMERICAN AT BLUE CANYON	24.16	7.61	40.78	28.99 (44)	83	1.62
STANISLAUS AT NEW MELONES	12.54	----	14.53	11.33 (41)	111	0.48
SAN JOAQUIN AT HUNTINGTON LK	13.18	4.80	29.20	16.98 (44)	78	0.05

Northern Sierra Precipitation: 8-Station Index, January 16, 2019



Percent of Average for this Date: 82%

2016-2017 Daily Precip (wettest) 94.7

1982-1983 (2nd wettest) 88.5

1997-1998 82.4

Average (1966-2015) 51.8

2017-2018 Daily Precip 41.0

2014-2015 Daily Precip 37.2

19.1

1976-1977(2nd driest & driest thru Aug) 19.0

Cumulative Daily/Monthly Precipitation (inches)

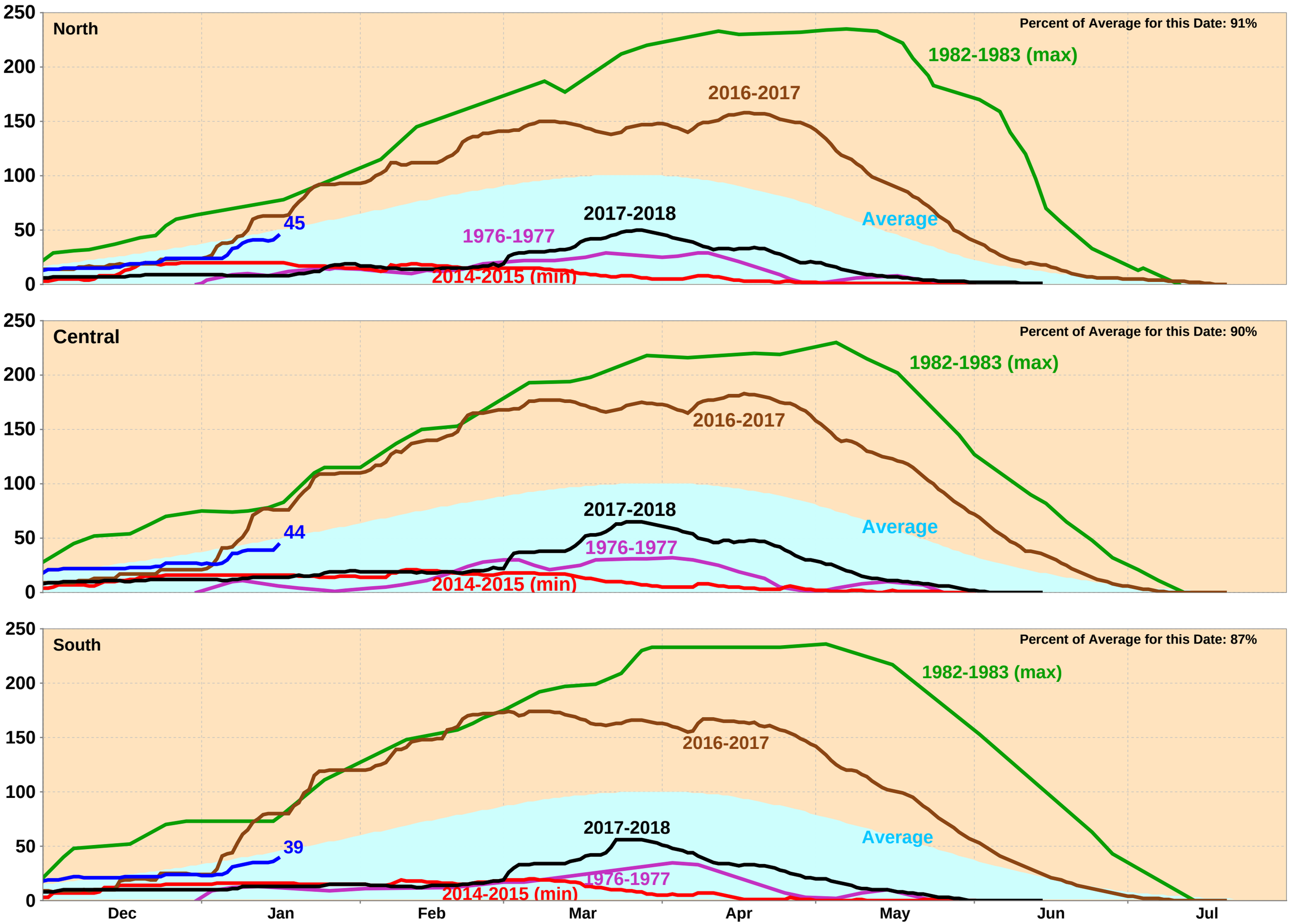
Total Water Year Precipitation

Water Year (October 1 - September 30)

Oct 1 Nov 1 Dec 1 Jan 1 Feb 1 Mar 1 Apr 1 May 1 Jun 1 Jul 1 Aug 1 Sep 1 Oct 1

0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100

California Snow Water Content, January 16, 2019, Percent of April 1 Average



Statewide Percent of April 1: 43%

Statewide Percent of Average for Date: 90%

Upper Sacramento River Summary Conditions – January (On-going):

Storage/Release Management Conditions:

- Meteorological Uncertainty: Shorter term forecasts (8-14 day) suggest decreased chances of precipitation
- Longer term forecasts (three-month outlook: Jan - Mar) suggest below normal chances of precipitation
- Water Supply Index information (DWR Jan 9th)
    - Dry (90% runoff exceedance probability) Operation Outlook suggests Shasta storage conditions will not reach an elevation of 1035 ft to utilize the Upper TCD Gate.
    - Next month's forecast will reflect January's storm events
- Current release from Keswick Dam: 3,600 cfs

Fall Run Fishery Conditions:

- CDFW has been providing updated fall run monitoring information to Reclamation and we have reviewed information through January 15, 2019. There remains uncertainty since analyses are still advancing.
- Peak fall run spawning was the week of Oct 17 and corresponds to a peak emergence the week of Jan 13th
- Approximately 3.6% of fall run redds have already been dewatered due to release reductions to 4,000 cfs
- There remains up to 5.4% of the redds in less than 12 inches of water that may be susceptible to dewatering (depending on emergence timing, flows, and stage), but further analysis of the timing of emergence from these redds is not completed.
- Current storm events are beneficial for fish emergence and increasing river flows/stage

Temperature Management:

- Temperature management: Active management has concluded for the season. Seasonal cooling is controlling water temperatures.
- Selective withdrawal: Releases are made from Middle Gates – rebuilding cold water pool
- Meteorological Uncertainty: Shorter term forecasts (8-14 day) suggest above normal temperatures
- Longer term forecasts (three-month outlook Jan – Mar) suggest above normal temperatures.

Action Rationale:

- Action: Keswick release reductions to 3,250 cfs beginning Jan 13th to Jan 20th for storage conservation
- Condition: NMFS BiOp Action I.2.2.A
- Uncertainties: Decisions on winter releases based solely on October, November, and December hydrology is highly uncertain, due to the significant rainfall and water supply during the winter. Currently, the January forecast showing a low water supply index value has increased our

concerns and suggests the need to conserve storage is imperative to improving the potential for more flexible selective withdrawal through the TCD upper gate during the summer. Additional winter and spring water supply gains will be critical to actually attaining the desired conditions we aim to achieve and hope for by later in the spring.

- Risk management (winter run): Reducing Keswick releases increases the likelihood of greater storage and higher Shasta Lake elevation to achieve reservoir elevations for operating upper gates during the early temperature management period. No access to the upper TCD gates significantly limits the ability to manage water temperatures for winter run.
- Risk management (fall run): Delaying release reductions later into winter reduces fall run redd dewatering risks and affords a greater percentage of redd emergence.
- Tradeoffs include, but are not limited to: Allowing Keswick releases to remain above the minimum flow rate of 3,250 cfs until mid-January may have evacuated storage that could otherwise could have been stored for temperature management, Delta water quality, water supply, and other requirements met through Shasta releases from spring through fall. Cutting releases earlier as had been contemplated during interagency discussions has been avoided and reduced fall run redds dewatering and increased fry emergence based on early winter Shasta reservoir conditions. Keeping flow releases above 3,250 cfs in January may reduce the opportunity for Shasta reservoir's storage to reach the TCD's upper gate for temperature management based upon current hydrologic and meteorological conditions and best professional judgement. Reclamation estimates, after a release reduction to 3,250 cfs, a dewatering total of 3.6-9.0% of fall run redds dependent on the timing of emergence from the remaining redds that may be potentially dewatered.
- CDFW plans to continue monitoring fall run conditions as they are able through the release reduction period

Resources:

- Excellent link for short term precipitation forecasts, overlay with burn areas, debris flow potential, etc: https://www.cnrfc.noaa.gov/
- Comprehensive Upper Sacramento fishery information: https://www.calfish.org/ProgramsData/ConservationandManagement/CentralValleyMonitoring/CDFWUpperSacRiverBasinSalmonidMonitoring.aspx

CVP Northern System Operation Outlooks

DRAFT January 2019

90% Runoff Exceedance Outlook:

Inflow based on DWR B120 90%; Historical Inflows Oct and future months

Federal End of the Month Storage/Elevation (TAF/Feet)

		Jan	Feb	Mar	Apr	May	Jun	Jul
Shasta	2268	2474	2761	3078	3162	3086	2758	2415
Elev.		983	997	1011	1015	1011	997	980

Monthly River Releases (cfs)

	Jan	Feb	Mar	Apr	May	Jun	Jul
Sacramento	3500	3250	3250	6000	7388	11000	10200
Clear Creek	200	200	200	218	216	288	150

Trinity Diversions (TAF)

	Jan	Feb	Mar	Apr	May	Jun	Jul
Carr Power Plant	14	10	13	120	97	135	130
Spring Creek PP	10	10	20	90	90	120	120

50% Runoff Exceedance Outlook:

Inflow based on DWR B120 50%; Historical Inflows Oct and future months

Federal End of the Month Storage/Elevation (TAF/Feet)

		Jan	Feb	Mar	Apr	May	Jun	Jul
Shasta	2268	2773	3345	3921	4193	4188	3936	3499
Elev.		997	1022	1045	1055	1054	1045	1029

Monthly River Releases (cfs)

	Jan	Feb	Mar	Apr	May	Jun	Jul
Sacramento	3500	3250	3250	5000	7500	10000	11500
Clear Creek	240	200	200	218	216	288	150

Trinity Diversions (TAF)

	Jan	Feb	Mar	Apr	May	Jun	Jul
Carr Power Plant	0	2	5	51	39	91	89
Spring Creek PP	20	35	30	30	40	80	80

Please note:

CVP actual operations do not follow any forecasted operation or outlook; actual operations are based on real-time conditions.

CVP operational forecasts or outlooks consider general system-wide dynamics and do not necessarily address specific watershed/tributary details.

CVP releases represent monthly averages.

CVP operations are updated monthly as new hydrology information is made available December through May.

Estimated CVP Operations 90% Exceedance

Storages

Federal End of the Month Storage/Elevation (TAF/Feet)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Trinity	**1460**	**1473**	**1524**	**1604**	**1608**	**1500**	**1372**	**1218**	**1060**	**982**	**952**	**922**	**904**
	Elev.	2301	2305	2312	2312	2303	2292	2278	2262	2253	2250	2246	2244
Whiskeytown	**206**	**206**	**206**	**206**	**238**	**238**	**238**	**238**	**238**	**238**	**206**	**206**	**206**
	Elev.	1199	1199	1199	1209	1209	1209	1209	1209	1209	1199	1199	1199
Shasta	**2268**	**2474**	**2761**	**3078**	**3162**	**3086**	**2758**	**2415**	**2129**	**1932**	**1768**	**1749**	**1820**
	Elev.	983	997	1011	1015	1011	997	980	965	953	943	942	947
Folsom	**312**	**302**	**344**	**446**	**522**	**568**	**476**	**370**	**329**	**305**	**290**	**281**	**284**
	Elev.	387	395	409	419	425	414	399	392	388	385	384	384
New Melones	**1789**	**1802**	**1812**	**1821**	**1717**	**1604**	**1506**	**1424**	**1357**	**1309**	**1258**	**1260**	**1264**
	Elev.	1034	1035	1036	1026	1014	1004	995	987	982	976	976	976
San Luis	**635**	**806**	**862**	**818**	**718**	**557**	**383**	**150**	**49**	**106**	**192**	**323**	**513**
	Elev.	521	535	531	516	497	475	446	429	434	441	454	495
Total		7063	7508	7972	7965	7553	6733	5815	5162	4871	4666	4741	4991

Monthly River Releases (TAF/cfs)

Trinity	TAF	18	17	18	32	180	47	28	28	27	23	18	18
	cfs	**300**	**300**	**300**	**540**	**2,924**	**783**	**450**	**450**	**450**	**373**	**300**	**300**
Clear Creek	TAF	12	11	12	13	13	17	9	9	9	12	12	12
	cfs	**200**	**200**	**200**	**218**	**216**	**288**	**150**	**150**	**150**	**200**	**200**	**200**
Sacramento	TAF	215	180	200	357	454	654	627	559	402	394	262	200
	cfs	**3500**	**3250**	**3250**	**6000**	**7388**	**11000**	**10200**	**9100**	**6750**	**6403**	**4400**	**3250**
American	TAF	108	83	77	76	79	149	155	93	74	51	48	49
	cfs	**1750**	**1500**	**1250**	**1285**	**1278**	**2509**	**2519**	**1517**	**1251**	**827**	**808**	**800**
Stanislaus	TAF	14	13	12	91	76	22	15	15	15	49	12	12
	cfs	**232**	**236**	**200**	**1537**	**1242**	**363**	**250**	**250**	**250**	**797**	**200**	**200**

Trinity Diversions (TAF)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Carr PP	14	10	13	120	97	135	130	131	50	14	25	21
Spring Crk. PP	**10**	**10**	**20**	**90**	**90**	**120**	**120**	**120**	**40**	**35**	**15**	**12**

Delta Summary (TAF)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Tracy		228	150	52	24	31	76	53	152	248	230	201	240
USBR Banks		0	0	0	0	0	0	0	0	0	0	0	0
Contra Costa		14.0	14.0	12.7	12.7	12.7	9.8	11.1	12.7	14.0	16.8	18.4	18.3
Total USBR		242	164	65	37	43	86	64	165	262	247	219	258
COA Balance		0	0	0	0	7	97	192	243	271	242	127	127
Old/Middle River Std.													
Old/Middle R. calc.		-4,960	-4,604	-2,121	-170	-367	-1,691	-1,314	-2,586	-4,414	-3,355	-3,365	-6,543
Computed DOI		9923	11545	11436	9834	7109	7094	4002	2993	3009	2993	3496	5547
Excess Outflow		3920	144	33	0	0	0	0	0	0	0	0	2050
% Export/Inflow		40%	34%	19%	6%	8%	15%	13%	29%	48%	47%	47%	59%
% Export/Inflow std.		65%	45%	35%	35%	35%	35%	65%	65%	65%	65%	65%	65%

Hydrology

	Trinity		Shasta		Folsom		New Melones	
Water Year Inflow (TAF)	724		3,488		1,249		516	
Year to Date + Forecasted % of mean	60%		63%		46%		49%	

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1/16/2019

Estimated CVP Operations 50% Exceedance

Storages

Federal End of the Month Storage/Elevation (TAF/Feet)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Trinity	**1460**	**1551**	**1653**	**1820**	**1952**	**1921**	**1829**	**1701**	**1585**	**1472**	**1447**	**1434**	**1461**
	Elev.	2307	2315	2328	2338	2335	2329	2319	2310	2301	2299	2298	2300
Whiskeytown	**206**	**206**	**206**	**206**	**238**	**238**	**238**	**238**	**238**	**238**	**206**	**206**	**206**
	Elev.	1199	1199	1199	1209	1209	1209	1209	1209	1209	1199	1199	1199
Shasta	**2268**	**2773**	**3345**	**3921**	**4193**	**4188**	**3936**	**3499**	**3135**	**2914**	**2755**	**2747**	**2894**
	Elev.	997	1022	1045	1055	1054	1045	1029	1014	1004	997	996	1003
Folsom	**312**	**437**	**579**	**663**	**753**	**958**	**919**	**762**	**685**	**641**	**595**	**561**	**550**
	Elev.	408	426	435	445	464	461	446	438	433	428	424	423
New Melones	**1789**	**1835**	**1883**	**1862**	**1819**	**1775**	**1725**	**1659**	**1595**	**1551**	**1510**	**1526**	**1550**
	Elev.	1037	1041	1040	1035	1031	1026	1020	1013	1009	1004	1006	1008
San Luis	**635**	**793**	**927**	**966**	**812**	**565**	**403**	**190**	**61**	**99**	**228**	**309**	**518**
	Elev.	518	539	543	515	477	440	411	376	393	403	420	458
Total		7595	8592	9438	9766	9644	9050	8049	7298	6915	6740	6783	7179

Monthly River Releases (TAF/cfs)

Trinity	TAF	18	17	18	28	258	126	68	37	27	23	18	18
	cfs	**300**	**300**	**300**	**477**	**4,189**	**2,120**	**1,102**	**600**	**450**	**373**	**300**	**300**
Clear Creek	TAF	15	11	12	13	13	17	9	9	9	12	12	12
	cfs	**240**	**200**	**200**	**218**	**216**	**288**	**150**	**150**	**150**	**200**	**200**	**200**
Sacramento	TAF	215	180	200	297	461	595	707	615	476	428	325	246
	cfs	**3500**	**3250**	**3250**	**5000**	**7500**	**10000**	**11500**	**10000**	**8000**	**6955**	**5468**	**4000**
American	TAF	108	111	246	208	400	185	242	154	119	121	123	123
	cfs	**1750**	**2000**	**4000**	**3500**	**6500**	**3111**	**3937**	**2508**	**2000**	**1963**	**2072**	**2000**
Stanislaus	TAF	14	13	93	83	96	56	18	18	18	49	12	12
	cfs	**232**	**236**	**1521**	**1400**	**1555**	**940**	**300**	**300**	**300**	**797**	**200**	**200**

Trinity Diversions (TAF)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Carr PP	0	2	5	51	39	91	89	90	89	13	25	12
Spring Crk. PP	**20**	**35**	**30**	**30**	**40**	**80**	**80**	**80**	**80**	**35**	**20**	**15**

Delta Summary (TAF)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Tracy	215	240	188	48	49	260	270	265	265	265	210	260
USBR Banks	0	0	0	0	0	0	15	15	15	8	0	0
Contra Costa	14.0	14.0	12.7	12.7	12.7	9.8	11.1	12.7	14.0	16.8	18.4	18.3
Total USBR	229	254	201	60	62	270	296	293	294	290	228	278
COA Balance	0	0	0	0	0	0	8	65	205	207	207	207
Old/Middle River Std.												
Old/Middle R. calc.	-5,028	-4,965	-3,440	-46	281	-3,772	-6,632	-5,277	-7,594	-4,794	-5,387	-6,577
Computed DOI	17813	22837	22628	17247	18935	7682	6507	4002	3009	4002	4505	8752
Excess Outflow	11810	11436	11224	8623	7678	0	0	0	0	0	0	4246
% Export/Inflow	28%	26%	23%	8%	7%	33%	44%	45%	63%	53%	56%	49%
% Export/Inflow std.	65%	45%	35%	35%	35%	35%	65%	65%	65%	65%	65%	65%

Hydrology

	Trinity	Shasta	Folsom	New Melones
Water Year Inflow (TAF)	1180	4,732	2,475	896
Year to Date + Forecasted % of mean	98%	85%	91%	85%

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1/16/2019

Northern CVP Water Temperature Report

January - 2019

DATE	Mean Daily Water Temperatures (°F)													Mean Daily Release (CFS)			Mean Daily Air Temperatures (°F)			
	TCD[1]	SHD	SPP[1]	KWK	SAC	CCR	BSF[2]	JLF	BND	RDB	IGO	LWS	-----[3]	Shasta Generation	Spring Creek P.P.	Keswick Total	RDD	BSF	RDB	LWS
Dec	54.0	53.4	52.4	52.8	52.5	52.3	51.4	50.9	50.6	50.6	50.2	-	-	3454	230	4012	48.0	45.4	47.6	-
01/01	52.9	52.2	50.5	51.4	51.0	50.5	**48.8**	47.9	? 47.4	47.4	47.2	40.2	-	3153	44	4001	50.0	44.9	43.7	29.0
01/02	52.7	52.2	50.6	51.2	50.8	50.6	**49.2**	48.3	? 47.7	47.3	47.4	40.0	-	4323	44	4090	43.5	39.4	41.1	30.7
01/03	52.9	52.3	50.4	51.1	50.7	50.5	**49.2**	48.4	47.9	47.6	47.5	41.4	-	3847	44	4114	42.0	37.5	39.4	34.6
01/04	52.9	52.3	50.0	51.3	51.0	50.9	**49.4**	48.8	? 48.3	47.9	47.6	41.9	-	2948	44	4077	44.5	39.6	41.8	36.8
01/05	52.5	52.1	49.6	51.3	50.7	50.5	**49.0**	48.5	48.1	47.8	46.6	41.6	-	3154	44	4075	40.0	38.7	39.9	36.9
01/06	52.3	51.9	49.4	51.3	50.3	50.6	**47.7**	47.8	47.7	47.8	46.2	41.4	-	3544	44	4078	45.0	45.8	46.0	34.5
01/07	52.3	51.9	49.4	51.2	50.6	50.9	**47.6**	47.3	? 47.0	46.9	46.8	42.1	-	3539	44	4064	46.0	45.0	44.7	37.5
01/08	52.2	51.8	48.6	51.1	50.7	51.0	**49.5**	49.4	! -	48.6	47.7	! -	-	3414	433	4073	50.5	48.0	48.7	-
01/09	52.1	51.7	48.5	50.7	50.5	51.1	**49.9**	50.0	? 50.0	50.3	48.7	# -	-	2068	1157	4077	55.0	55.0	54.8	-
01/10	52.1	51.7	48.4	50.5	50.5	50.9	**50.7**	50.7	50.8	50.8	48.8	# -	-	791	1976	4080	55.0	50.1	51.2	-
01/11	52.0	51.6	48.4	50.3	50.2	50.4	**49.9**	49.8	49.9	50.2	47.9	# -	-	2812	1263	4071	46.5	46.2	47.6	-
01/12	51.8	51.5	48.3	? 50.5	50.4	50.6	**49.9**	49.8	49.8	49.9	48.0	# -	-	1867	979	4077	52.5	47.2	51.5	-
01/13	51.8	51.4	48.5	! -	50.5	50.7	**49.7**	49.6	49.6	49.7	47.8	# -	-	3321	409	3998	51.5	45.3	49.1	-
01/14	51.8	51.2	48.5	! -	50.3	50.4	**49.1**	49.0	48.9	49.0	47.1	# -	-	3400	442	3811	58.5	44.9	47.2	-
01/15	51.7	51.1	48.3	50.6	50.4	50.6	**49.8**	49.7	49.7	49.4	47.7	# -	-	2363	937	3660	! -	47.2	47.3	-
01/16																				
01/17																				
01/18																				
01/19																				
01/20																				
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01/31																				
Jan	52.3	51.8	49.2	51.0	50.6	50.7	49.3	49.0	48.8	48.7	47.5	41.2	-	2970	527	4023	48.6	45.0	46.3	34.3
													Total CFS	44544	7904	60346				
													Total AF	88351	15677	119694				

Legend

? = 1-9 hours of data missing (Average includes estimations)
! = 10 or more hours of data missing (Average not calculated)
= Station out of service
↑ = Record high air temperature
↓ = Record low air temperature
= Monthly Averages

Notes

[1] Temperatures are weighted averages based on individual penstock flow and temperature
Highlighted cells in the TCD column indicate a TCD change was made on that day
[2] Current control point (see page 3 for more details)
[3] Column not used this month

DATE	Redding (RDD) Daily Air Temperatures (°F)																																						
	Actual			Forecasted																																					
	Previous Day			Current Day			1 Day			2 Days			3 Days			4 Days			5 Days			6 Days			7 Days			8 Days			9 Days			10 Days					
	↓	↑	Avg	↓	↑	Avg	↓	↑	Avg	↓	↑	Avg	↓	↑	Avg	↓	↑	Avg	↓	↑	Avg	↓	↑	Avg	↓	↑	Avg	↓	↑	Avg	↓	↑	Avg	↓	↑	Avg			
01/01	41	55	48.0	42	56	49.0	33	56	44.5	35	55	45.0	36	56	46.0	36	53	44.5	37	54	45.5	40	54	47.0	44	53	48.5	41	57	49.0	38	57	47.5	40	56	48.0			
01/02	42	58	50.0	31	59	45.0	33	56	44.5	34	55	44.5	38	53	45.5	41	52	46.5	41	54	47.5	42	55	48.5	43	53	48.0	39	56	47.5	35	57	46.0	38	61	49.5			
01/03	29	58	43.5	30	56	43.0	33	55	44.0	36	51	43.5	39	51	45.0	41	53	47.0	42	54	48.0	39	56	47.5	45	55	50.0	40	55	47.5	38	59	48.5	42	60	51.0			
01/04	30	54	42.0	33	53	43.0	36	49	42.5	38	49	43.5	40	54	47.0	44	54	49.0	43	55	49.0	39	55	47.0	40	54	47.0	39	54	46.5	37	55	46.0	38	59	48.5			
01/05	32	57	44.5	33	50	41.5	38	48	43.0	39	52	45.5	42	54	48.0	43	53	48.0	40	55	47.5	37	56	46.5	39	61	50.0	40	60	50.0	40	61	50.5	42	62	52.0			
01/06	32	48	40.0	44	48	46.0	39	50	44.5	43	54	48.5	44	55	49.5	41	56	48.5	39	56	47.5	40	56	48.0	46	56	51.0	41	58	49.5	39	57	48.0	39	62	50.5			
01/07	43	47	45.0	43	50	46.5	44	53	48.5	46	55	50.5	43	56	49.5	42	55	48.5	43	53	48.0	41	54	47.5	45	62	53.5	44	57	50.5	42	56	49.0	43	58	50.5			
01/08	43	49	46.0	47	54	50.5	47	56	51.5	43	58	50.5	42	57	49.5	41	55	48.0	42	55	48.5	39	56	47.5	40	60	50.0	43	55	49.0	40	57	48.5	40	54	47.0			
01/09	47	54	50.5	53	55	54.0	44	57	50.5	40	56	48.0	41	57	49.0	42	51	46.5	44	52	48.0	41	50	45.5	46	55	50.5	40	58	49.0	41	57	49.0	37	61	49.0			
01/10	52	58	55.0	51	56	53.5	42	56	49.0	41	56	48.5	40	54	47.0	41	55	48.0	41	53	47.0	43	54	48.5	46	56	51.0	45	58	51.5	42	61	51.5	42	59	50.5			
01/11	51	59	55.0	39	56	47.5	43	58	50.5	40	56	48.0	40	54	47.0	41	52	46.5	43	53	48.0	43	54	48.5	46	56	51.0	43	55	49.0	42	58	50.0	37	62	49.5			
01/12	38	55	46.5	48	60	54.0	37	59	48.0	37	55	46.0	40	51	45.5	42	54	48.0	44	54	49.0	41	54	47.5	45	57	51.0	43	60	51.5	42	63	52.5	42	66	54.0			
01/13	48	57	52.5	37	60	48.5	36	57	46.5	40	51	45.5	42	54	48.0	44	53	48.5	42	54	48.0	41	55	48.0	42	57	49.5	40	61	50.5	41	63	52.0	43	67	55.0			
01/14	37	66	51.5	54	57	55.5	41	50	45.5	44	55	49.5	46	53	49.5	40	54	47.0	40	57	48.5	41	55	48.0	42	59	50.5	42	65	53.5	44	66	55.0	43	64	53.5			
01/15	54	63	58.5	46	51	48.5	43	55	49.0	46	54	50.0	39	53	46.0	40	58	49.0	42	55	48.5	38	57	47.5	41	63	52.0	41	65	53.0	43	66	54.5	42	65	53.5			
01/16	NR	NR	NR	45	54	49.5	47	55	51.0	40	53	46.5	41	58	49.5	44	57	50.5	36	58	47.0	37	61	49.0	37	65	51.0	44	65	54.5	41	65	53.0	42	65	53.5			
01/17																																							
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01/30																																							
01/31																																							

Web Links

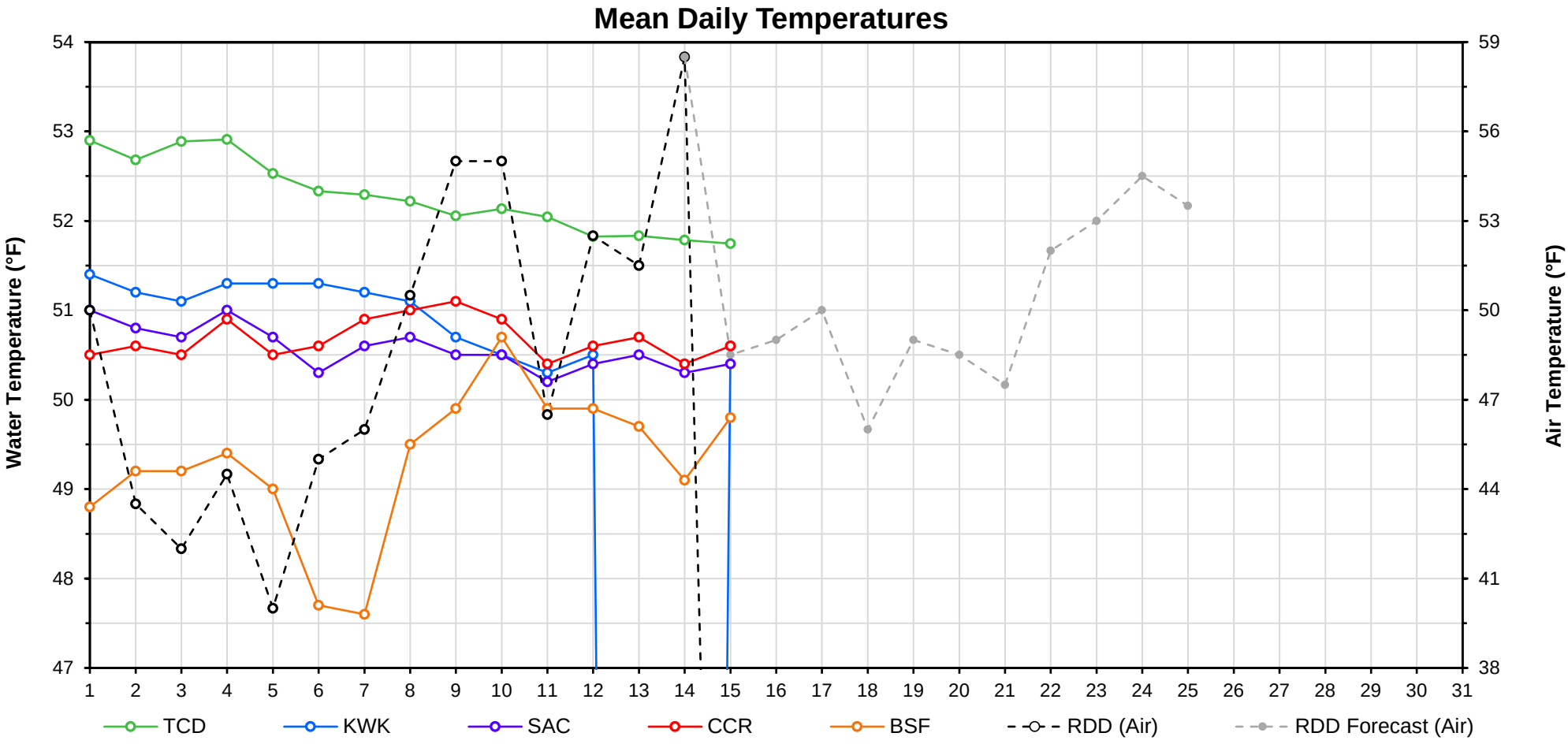
10-Day Min/Max Forecast

Previous Days Min/Max Actuals

Legend

NR = Forecasted temperatures not recorded

100 = Previous day actual temperatures in red and bolded indicate a record temperature for that date



Station Details			
Code	Body of Water	Location[1]	CDEC Link
TCD	N/A	Shasta Power Plant	N/A
SHD	Sacramento River	0.3 miles downstream of Shasta Power Plant	Click Here
SPP	N/A	Spring Creek Power Plant	N/A
KWK	Sacramento River	0.8 miles downstream of Keswick Dam	Click Here
SAC	Sacramento River	4.8 miles downstream of Keswick Dam	Click Here
CCR	Sacramento River	9.7 miles downstream of Keswick Dam	Click Here
BSF	Sacramento River	25 miles downstream of Keswick Dam	Click Here
JLF	Sacramento River	34 miles downstream of Keswick Dam	Click Here
BND	Sacramento River	41 miles downstream of Keswick Dam	Click Here
RDB	Sacramento River	58 miles downstream of Keswick Dam	Click Here
IGO	Clear Creek	7.3 miles downstream of Whiskeytown Dam	Click Here
LWS	Trinity River	1.1 miles downstream of Lewiston Dam	Click Here
DGC[2]	Trinity River	19 miles downstream of Lewiston Dam	Click Here
NFH[3]	Trinity River	38 miles downstream of Lewiston Dam	Click Here

Temperature Control Point		
Point	Temp. (°F)	Begin Date
BSF	**56.0**	**05/25/2018**

Notes

[1] Distances are approximate
[2] DGC is only reported in September
[3] NFH is only reported in October, November and December

DATE	Daily Max		7DADM[1]		DAT[2]
	SAC	CCR	SAC	CCR	BSF
01/01	52.0	51.5	52.3	52.2	48.8
01/02	51.9	51.8	52.2	52.0	49.2
01/03	51.5	51.5	52.1	51.9	49.2
01/04	52.0	52.0	52.1	51.9	49.4
01/05	50.9	50.7	51.8	51.6	49.0
01/06	50.7	50.7	51.6	51.4	47.7
01/07	51.0	51.3	51.4	51.4	47.6
01/08	51.0	51.2	51.3	51.3	49.5
01/09	50.9	51.7	51.1	51.3	49.9
01/10	51.2	51.6	51.1	51.3	50.7
01/11	50.9	51.2	50.9	51.2	49.9
01/12	51.7	51.9	51.1	51.4	49.9
01/13	51.7	52.0	51.2	51.6	49.7
01/14	51.1	51.2	51.2	51.5	49.1
01/15	50.6	50.8	51.2	51.5	49.8
01/16					
01/17					
01/18					
01/19					
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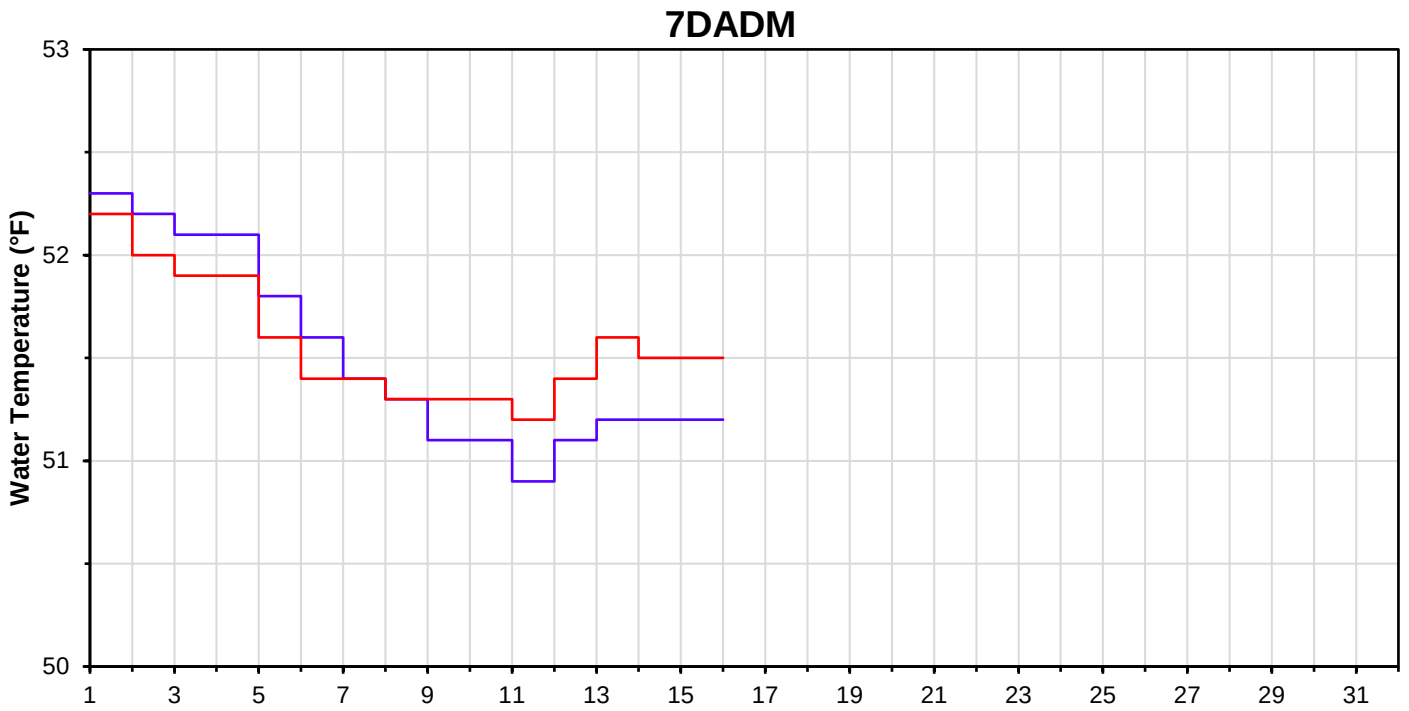
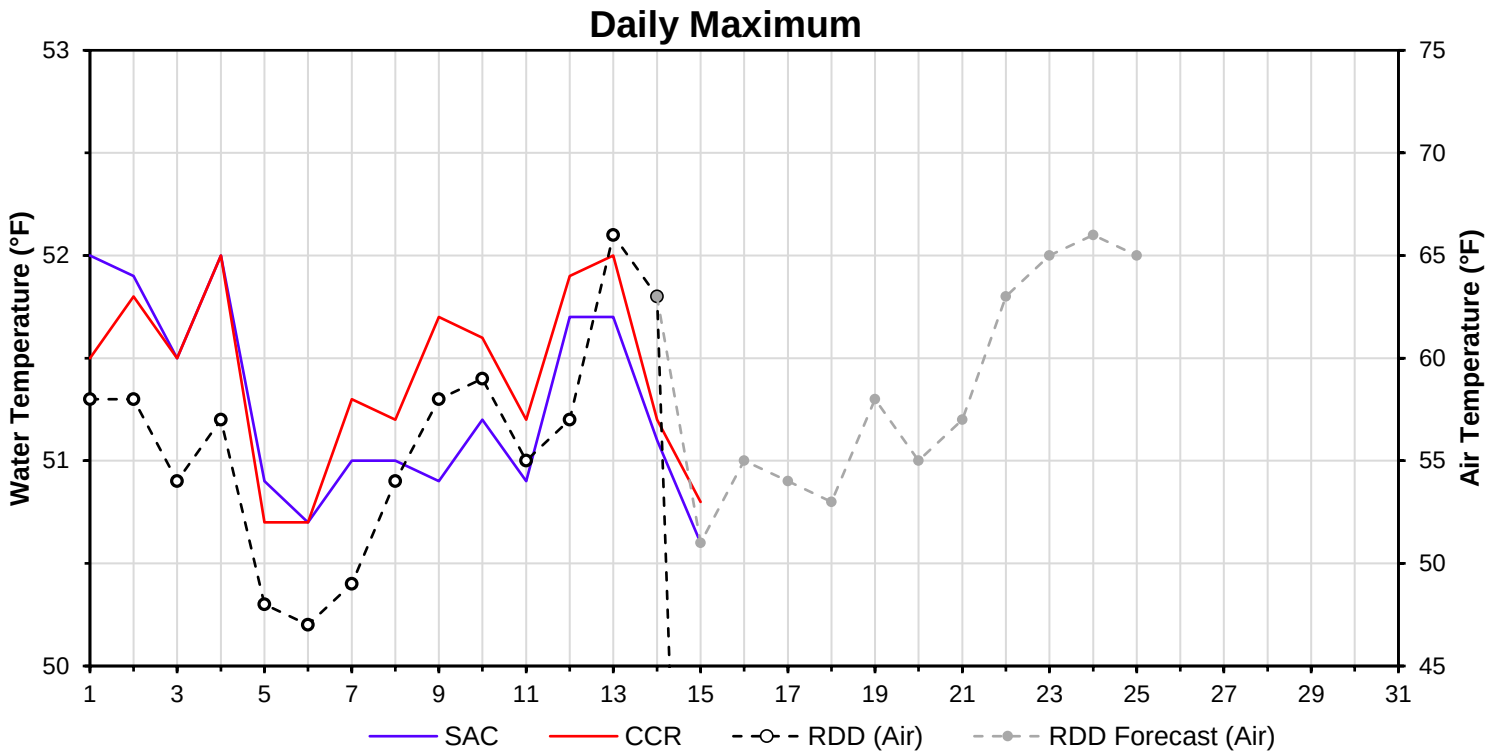
01/30					
01/31					

Notes

[1] 7DADM = 7-Day Average Daily Maximum

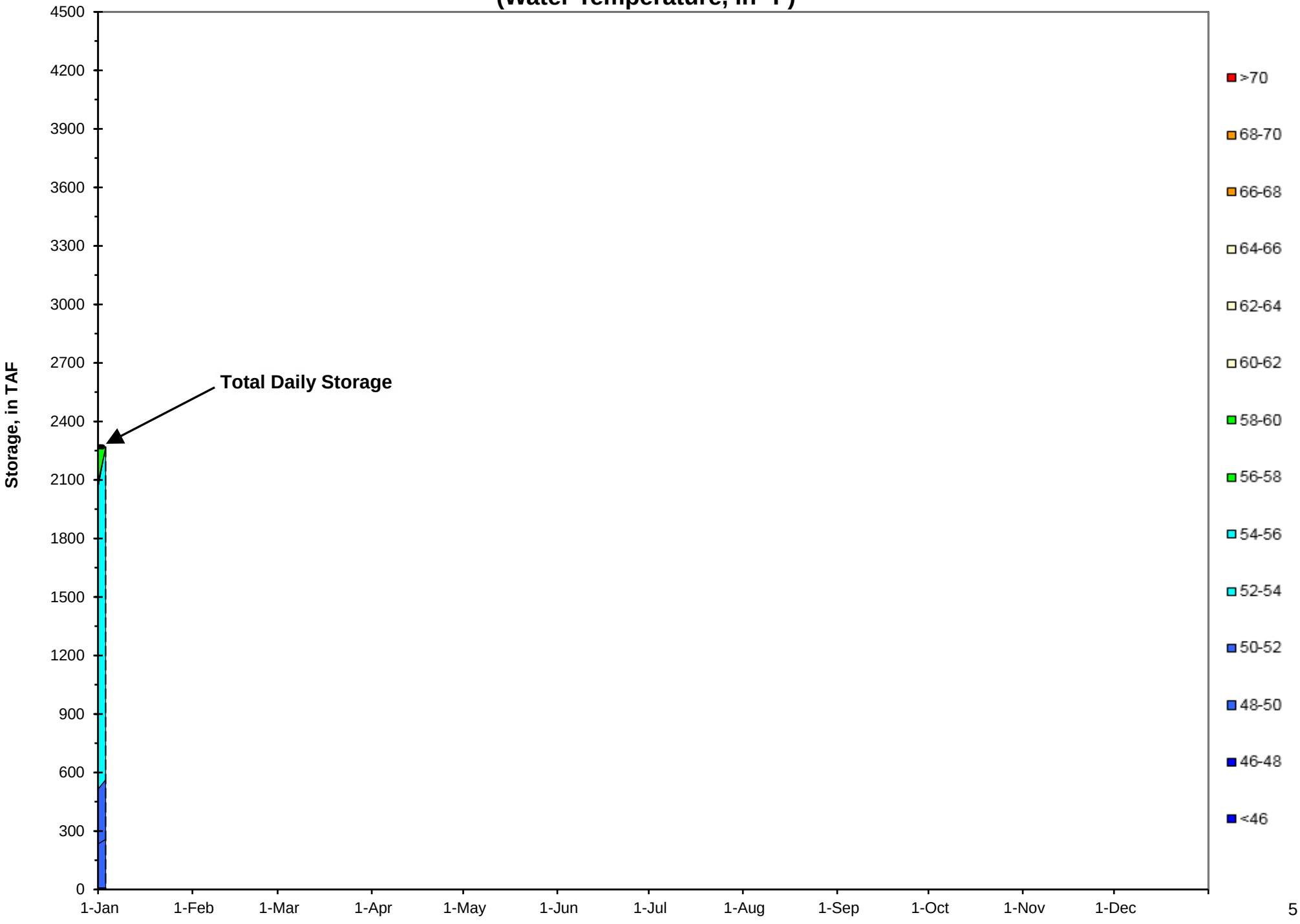
[2] DAT = Daily Average Temperature





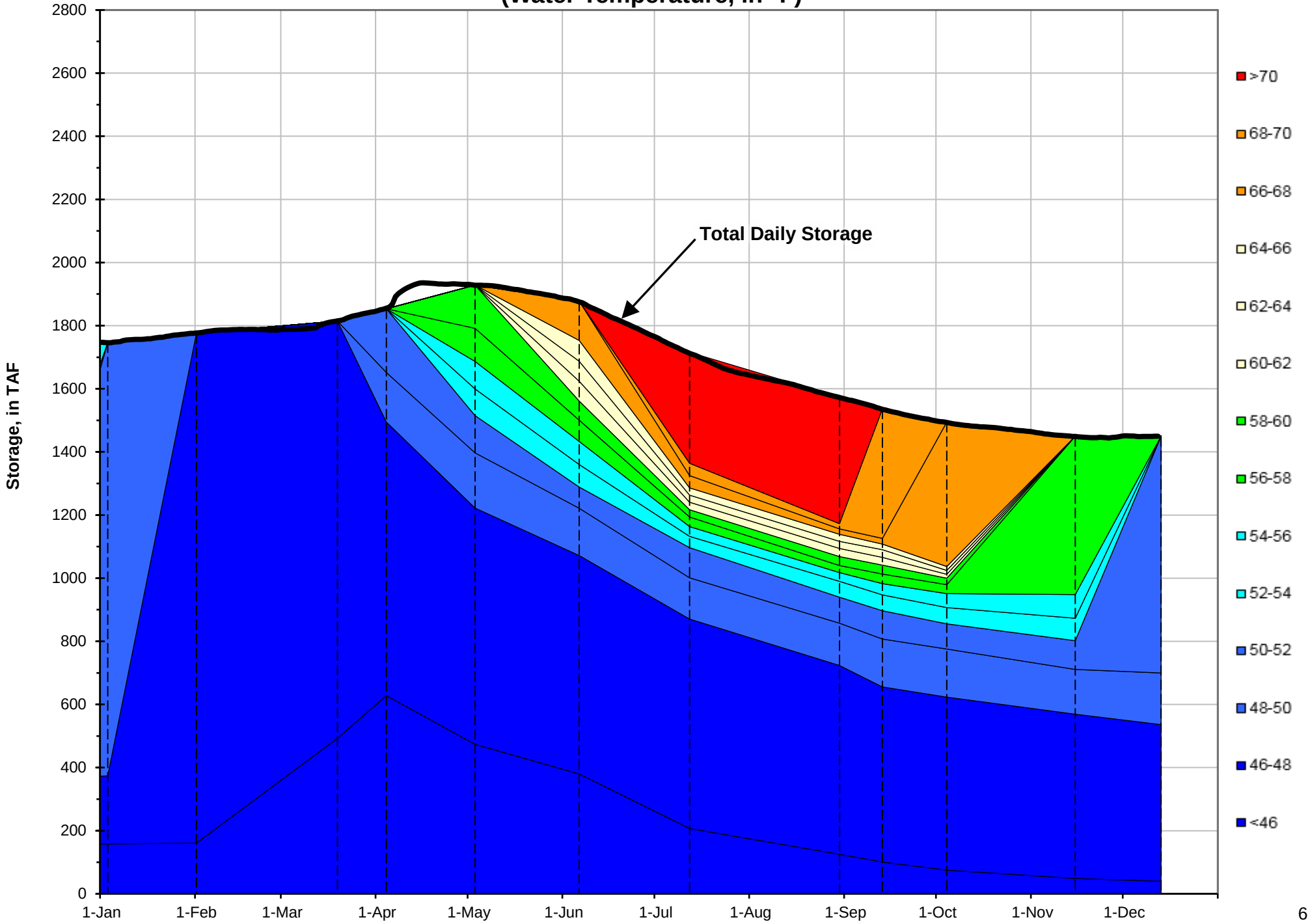
Latest Profile Date: 01/03/2019

Shasta Lake Isothermobaths - 2019
(Water Temperature, in °F)



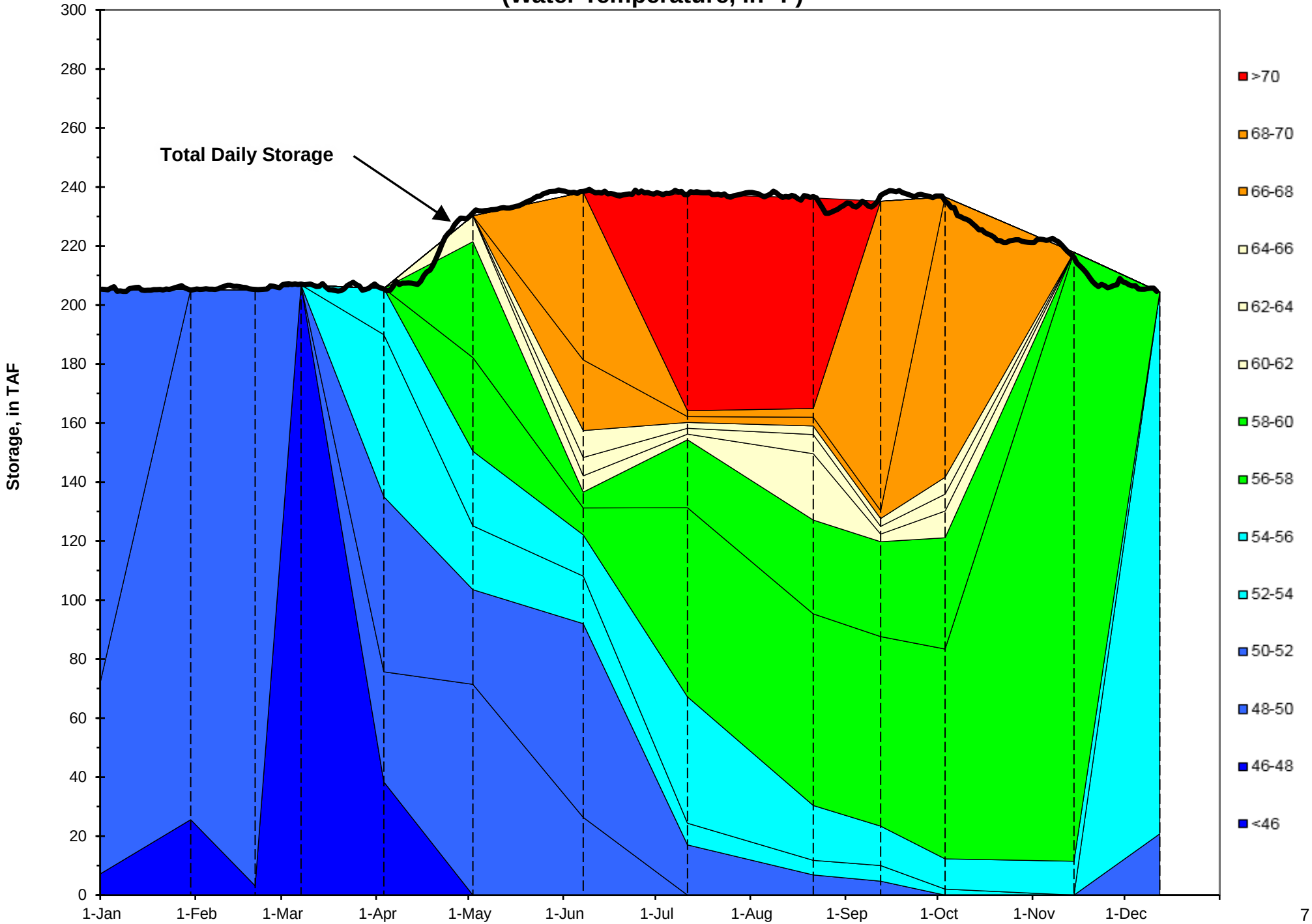
Latest Profile Date: 12/13/2018

Trinity Lake Isothermobaths - 2018
(Water Temperature, in °F)



Latest Profile Date: 12/12/2018

Whiskeytown Lake Isothermobaths - 2018
(Water Temperature, in °F)

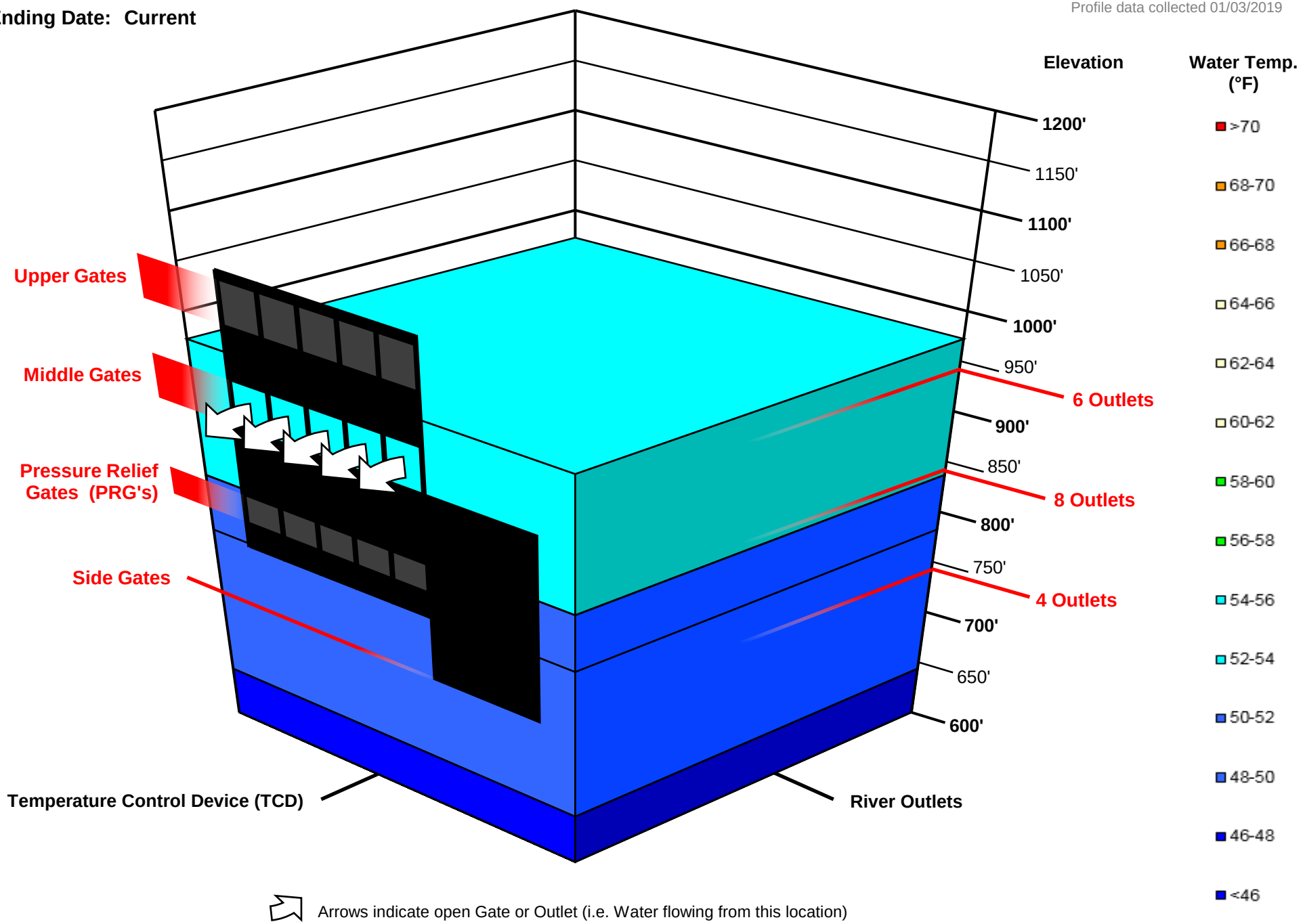


Shasta TCD Configuration

Starting Date: 01/03/2019

Ending Date: Current

Profile data collected 01/03/2019



Arrows indicate open Gate or Outlet (i.e. Water flowing from this location)

Precipitation Forecast

Storm Total Rain Wednesday Afternoon - Friday Morning

.10 .25 .50 1 1.50 2 3 4 6 8 10 15 20 30

Eureka
1.00-2.00"

Weaverville
2.00-3.00"

Redding
2.00-3.00"

Susanville
1.00-2.00"

Chico
1.00-2.00"

Ukiah
3.00-4.00"

Grass Valley
4.00-5.00"

South Lake Tahoe
2.00-3.00"

Santa Rosa
2.00-3.00"

Sacramento
1.00-2.00"

Stockton
1.00-2.00"

Sonora
2.00-3.00"

San Francisco
1.00-2.00"

Modesto
1.00-2.00"

Yosemite
4.00-5.00"

Issued: January 15, 2019

Snow Forecast

Expected Snowfall Wednesday Afternoon - Friday Morning

(in) 1 2 3 4 6 8 12 18 24 30 36

Interstate 5
1-2"

Lassen Park
48-60"

Donner Pass
36-48"

Echo Pass
24-36"

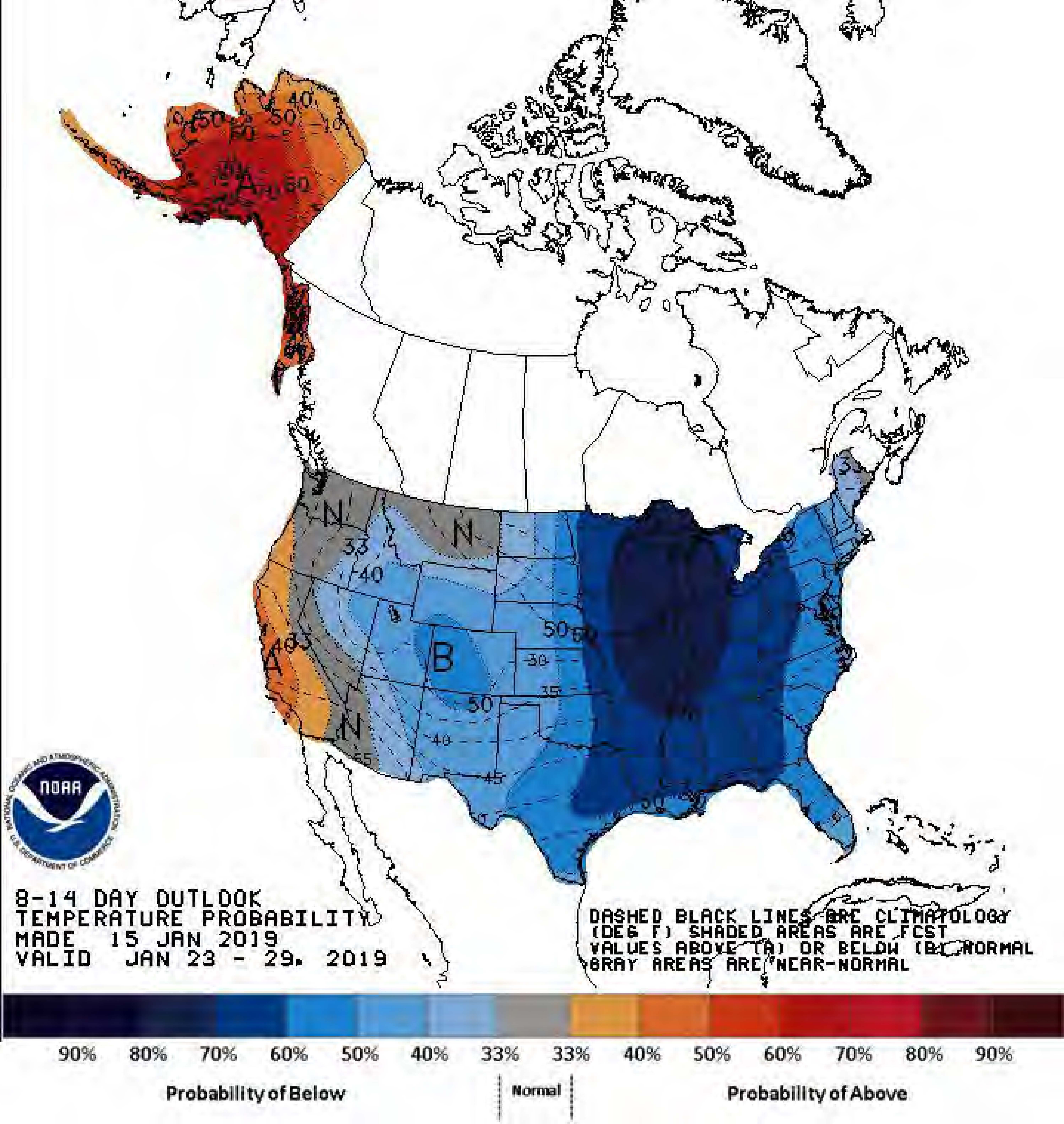
Carson Pass
60-80"

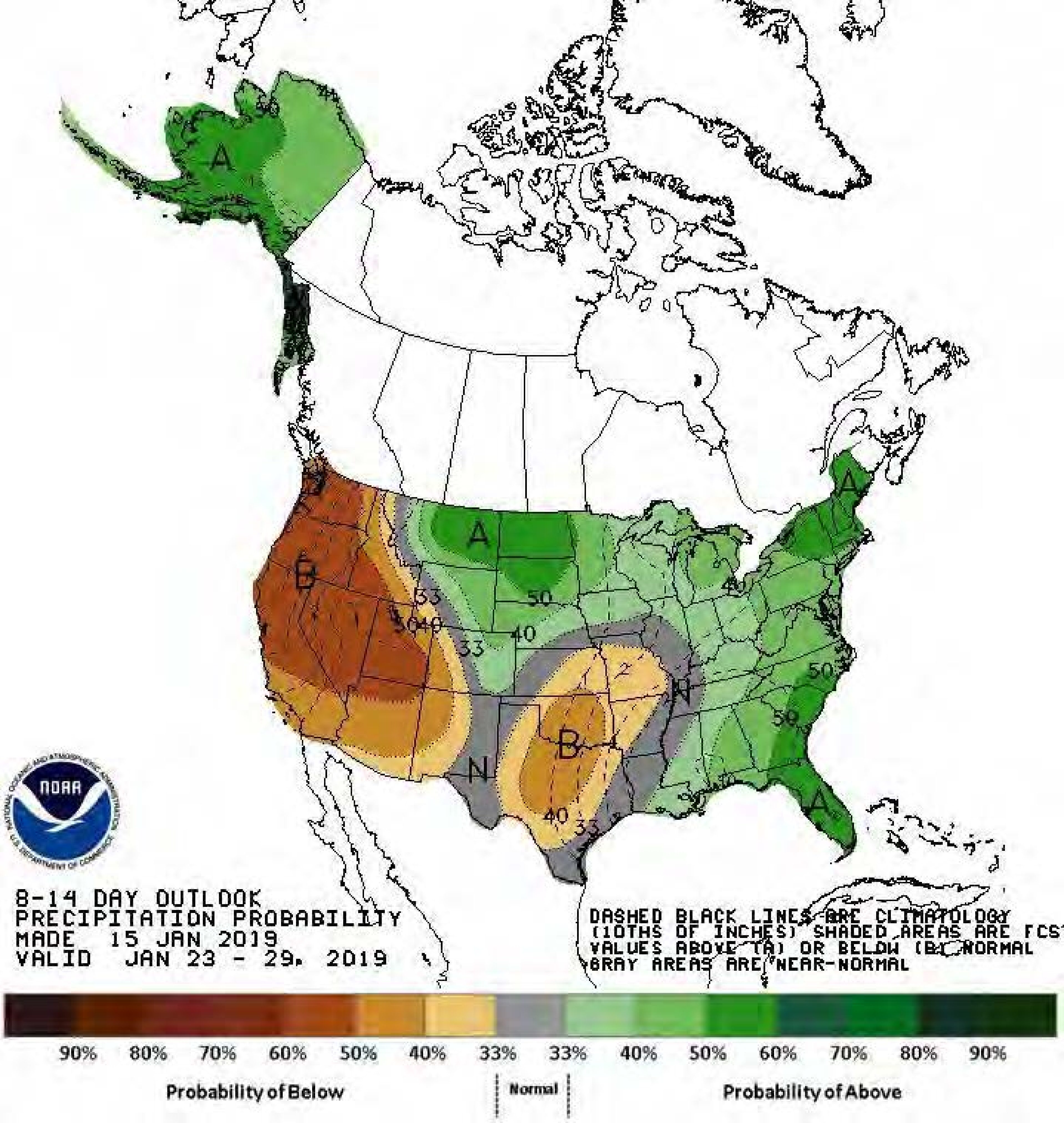
Ebbetts Pass
60-80"

Sonora Pass
60-80"

Tioga Pass
36-48"

Issued: January 15, 2019


8-14 DAY OUTLOOK
TEMPERATURE PROBABILITY
MADE 15 JAN 2019
VALID JAN 23 - 29, 2019
DASHED BLACK LINES ARE CLIMATOLOGY
(DEG F) SHADED AREAS ARE FCST
VALUES ABOVE (A) OR BELOW (B) NORMAL
GRAY AREAS ARE NEAR-NORMAL
90% 80% 70% 60% 50% 40% 33% 33% 40% 50% 60% 70% 80% 90%
Probability of Below
Normal
Probability of Above


8-14 DAY OUTLOOK
PRECIPITATION PROBABILITY
MADE 15 JAN 2019
VALID JAN 23 - 29, 2019
DASHED BLACK LINES ARE CLIMATOLOGY
(10THS OF INCHES) SHADED AREAS ARE FCST
VALUES ABOVE (A) OR BELOW (B) NORMAL
GRAY AREAS ARE NEAR-NORMAL
90% 80% 70% 60% 50% 40% 33% 33% 40% 50% 60% 70% 80% 90%
Probability of Below
Normal
Probability of Above