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Natural Resources Conservation Service

Idaho Water Supply Outlook Report

January 1, 2018

2017 runoff is setting the stage for the 2018 runoff season. The picture of the Big Lost River near Arco (above) taken on December 21, 2017, illustrates the high streamflows going into this winter. Baseflows and springs are flowing above normal across most of the state. Resulting, reservoir storage is in good shape across the state. Magic Reservoir is pictured below on December 21, 2017, with ice at the confluence of the Big Wood River and Camas Creek.

High baseflows and reservoir carryover storage is good news for Idaho's numerous water users and provides a cushion for parts of the state if the current drier weather pattern persists. Current snowpacks range from near normal in the northern half of Idaho to only 40% of normal in the Weiser and Owyhee basins.

Idaho Water Supply Committee Meeting

January 11, 2018

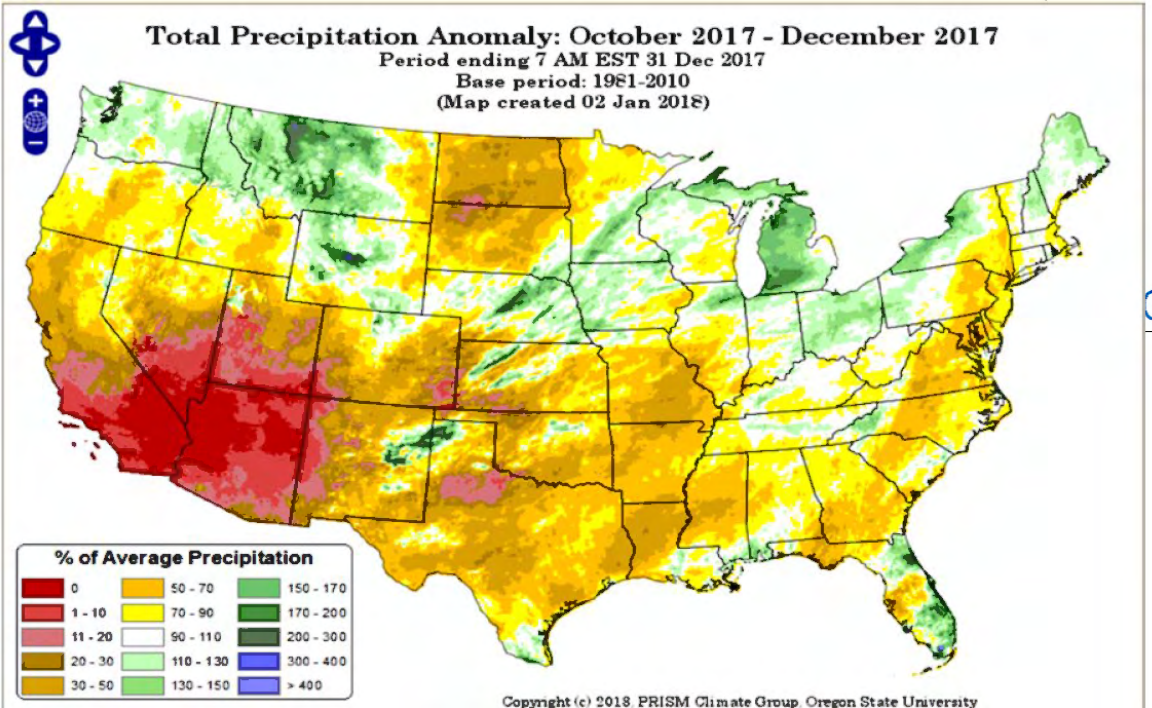
USDA

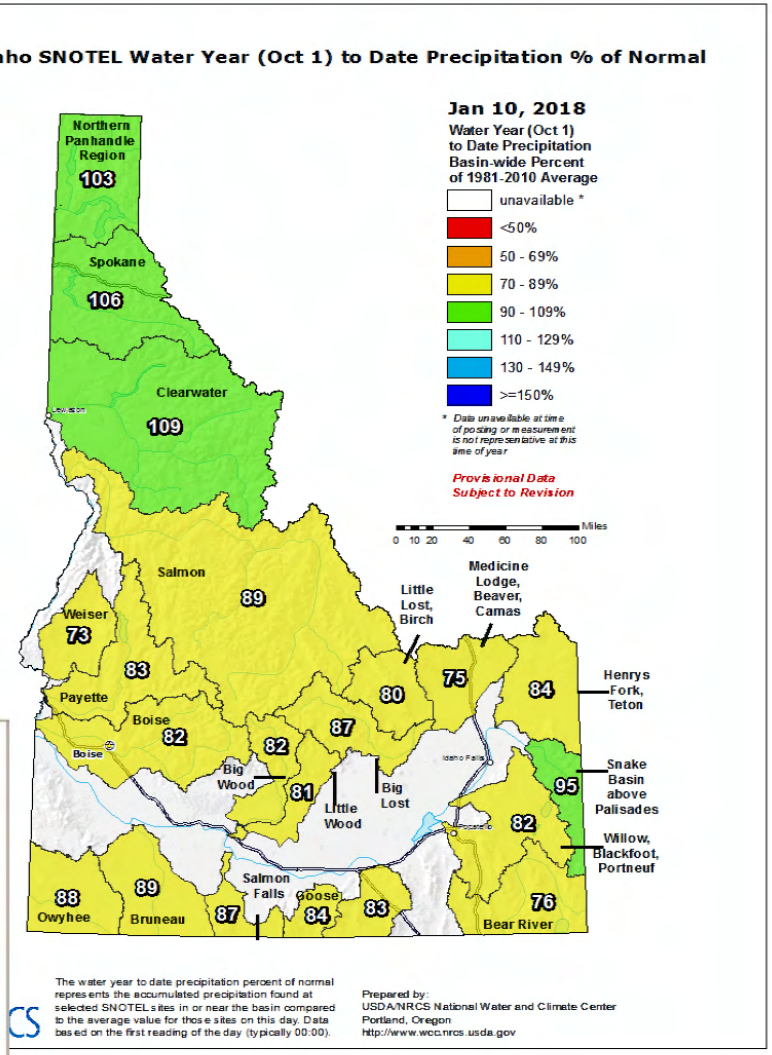
Ron Abramovich
Water Supply Specialist
United States Department of Agriculture

Natural Resources Conservation Service

USDA
United States Department of Agriculture

Water Year-to-Date Precipitation (Oct-Dec) for the country and to view storm tracks in PNW and Idaho.





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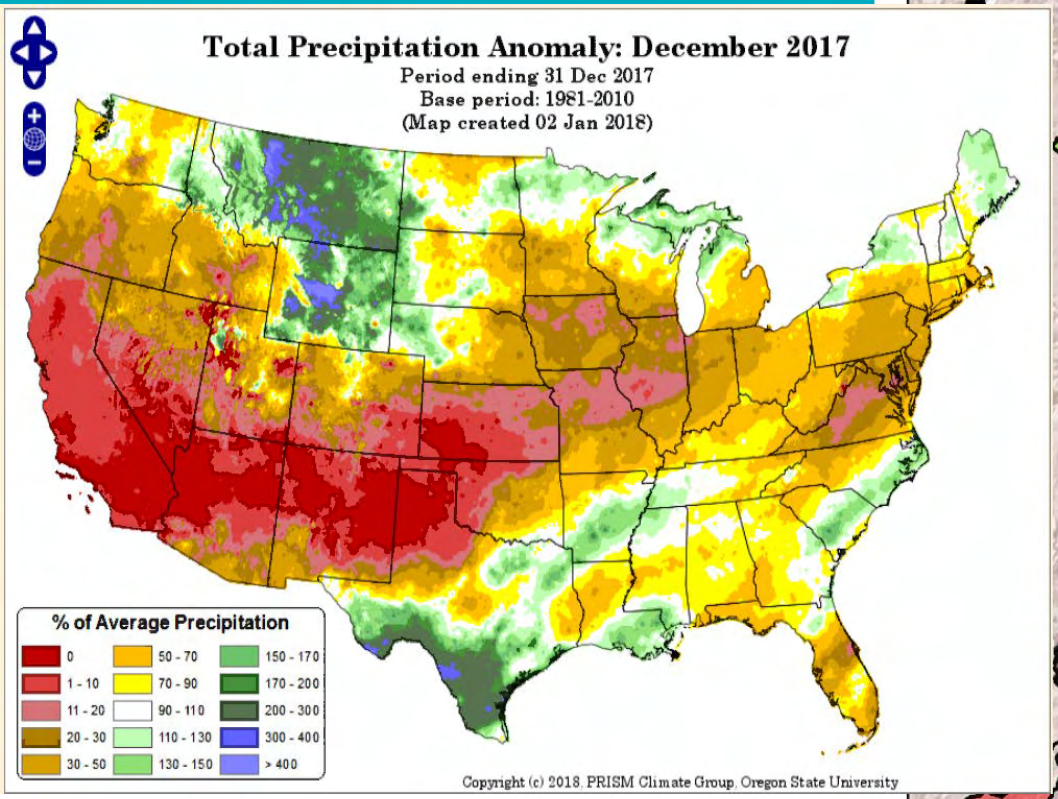
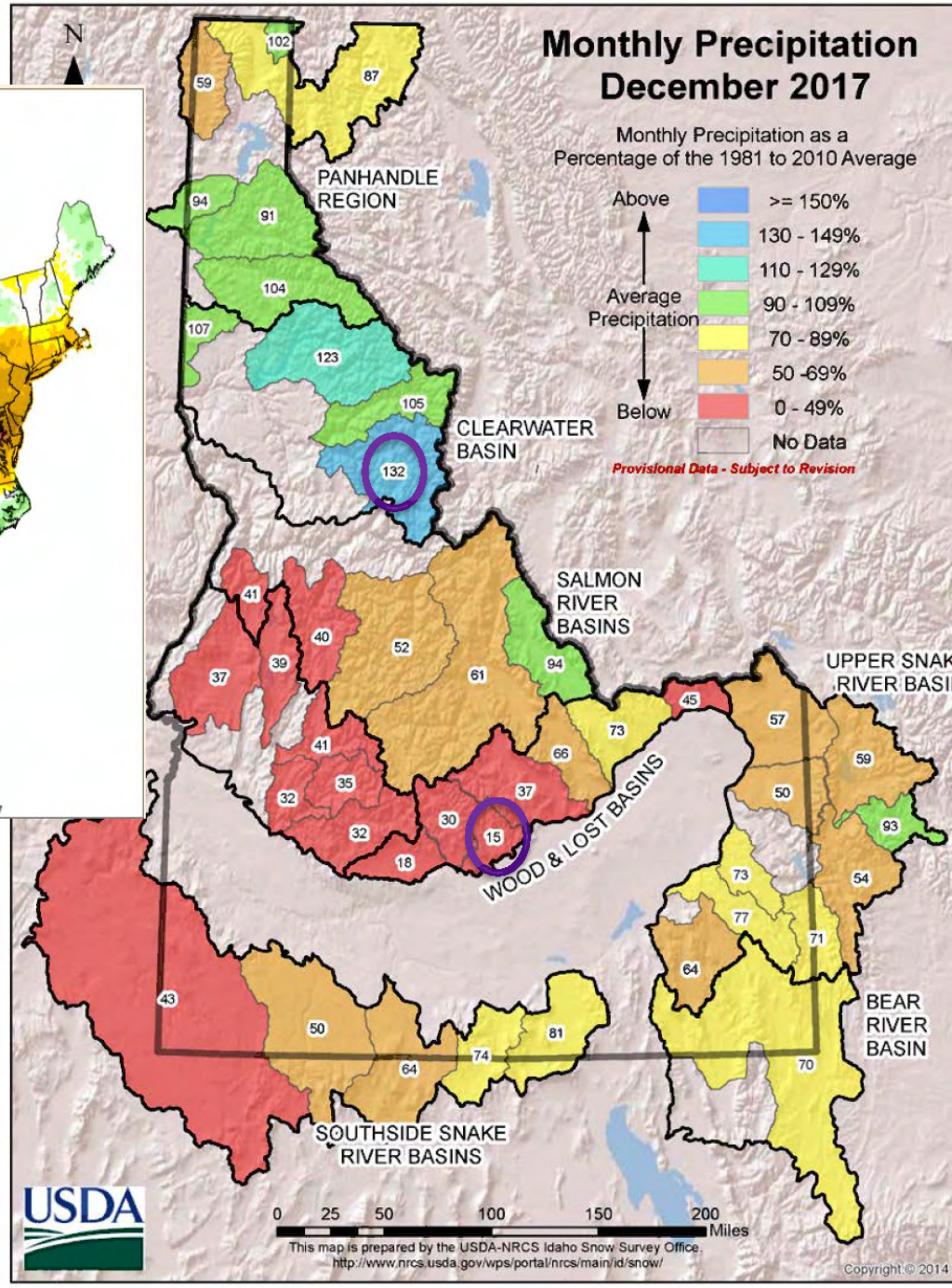
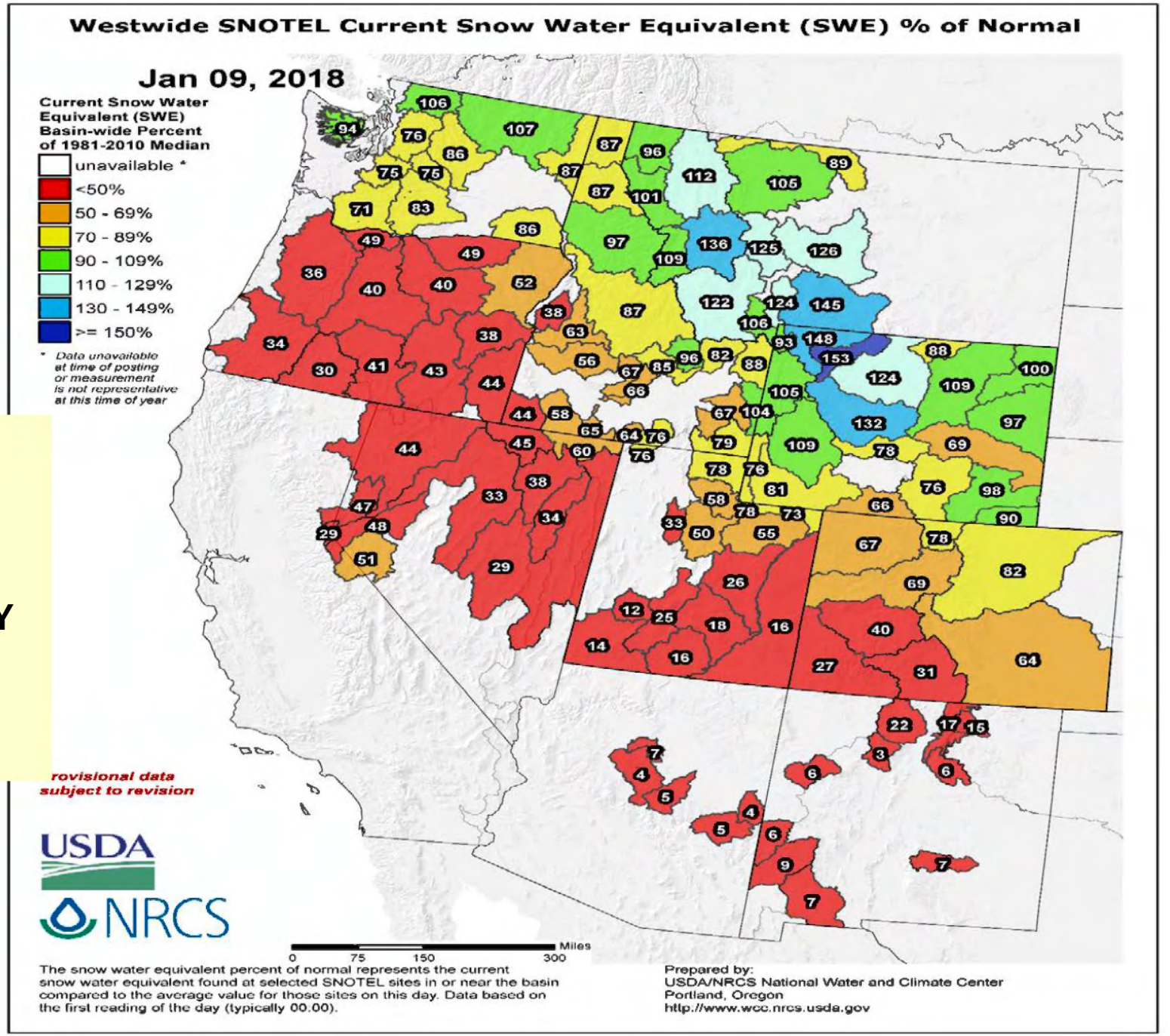




December Idaho SNOTEL Precipitation ranged from 15% in Little Wood to 132% in Selway basins



Snow Water Equivalent for Jan 9, 2018.

Note: MT & WY hosts the best snowpacks in the West.

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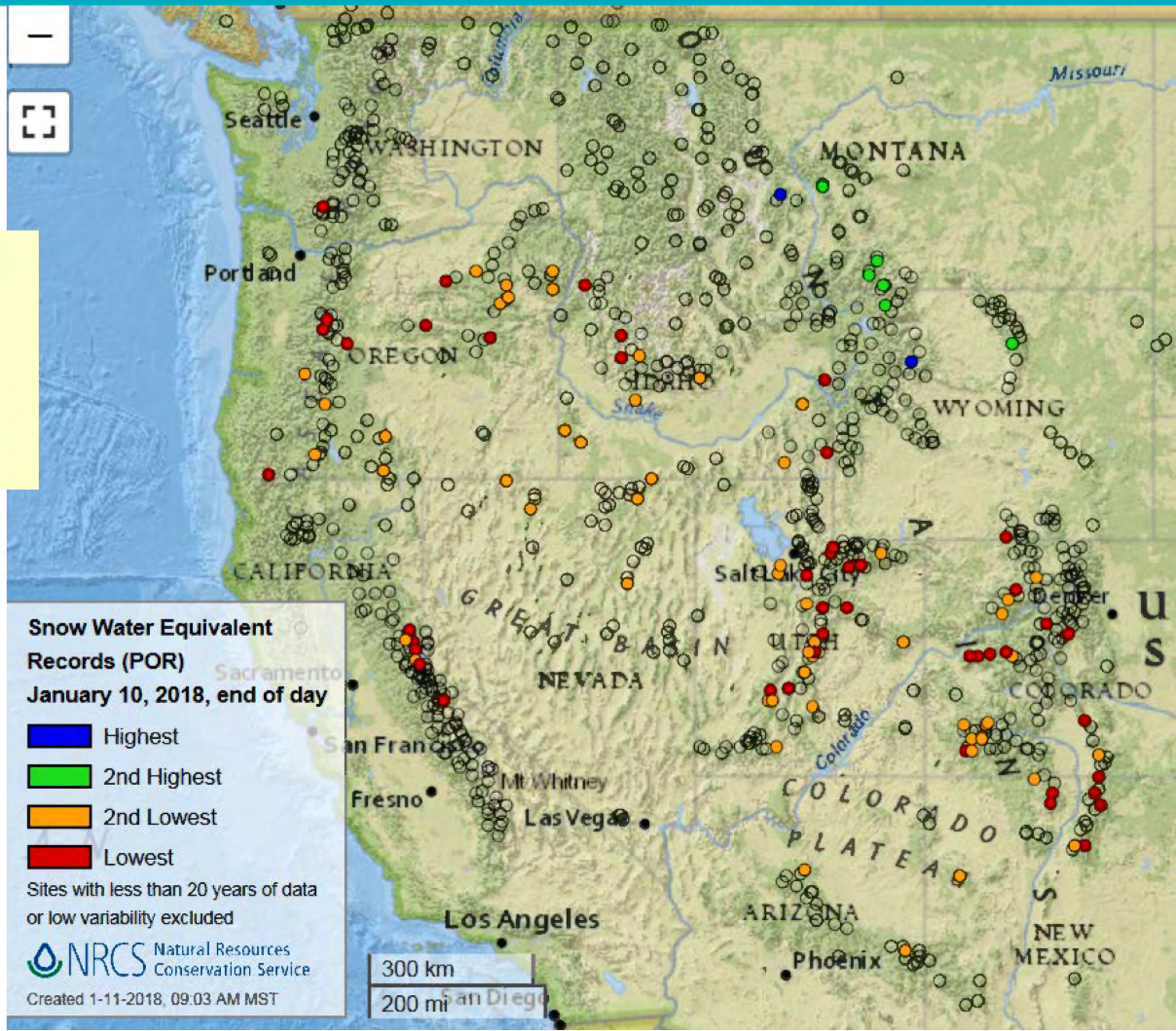
Jan 19 SWE Records High & Low in West



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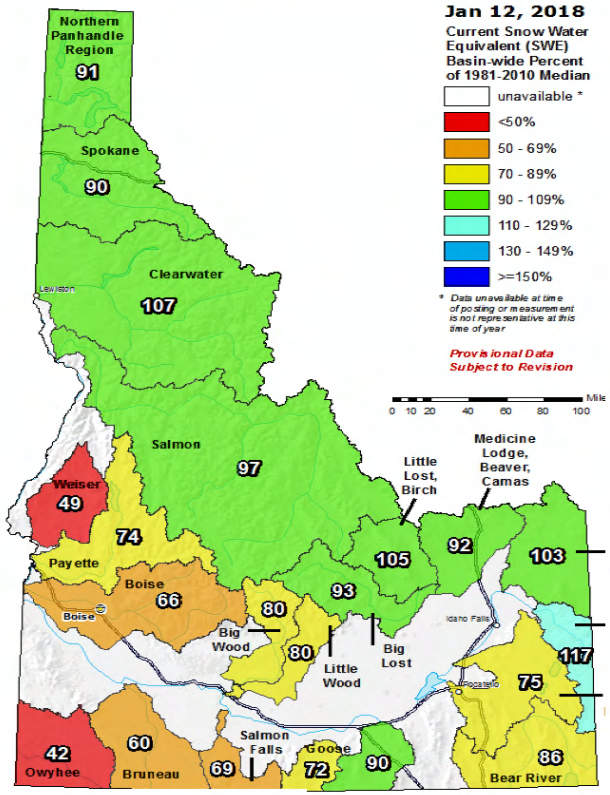
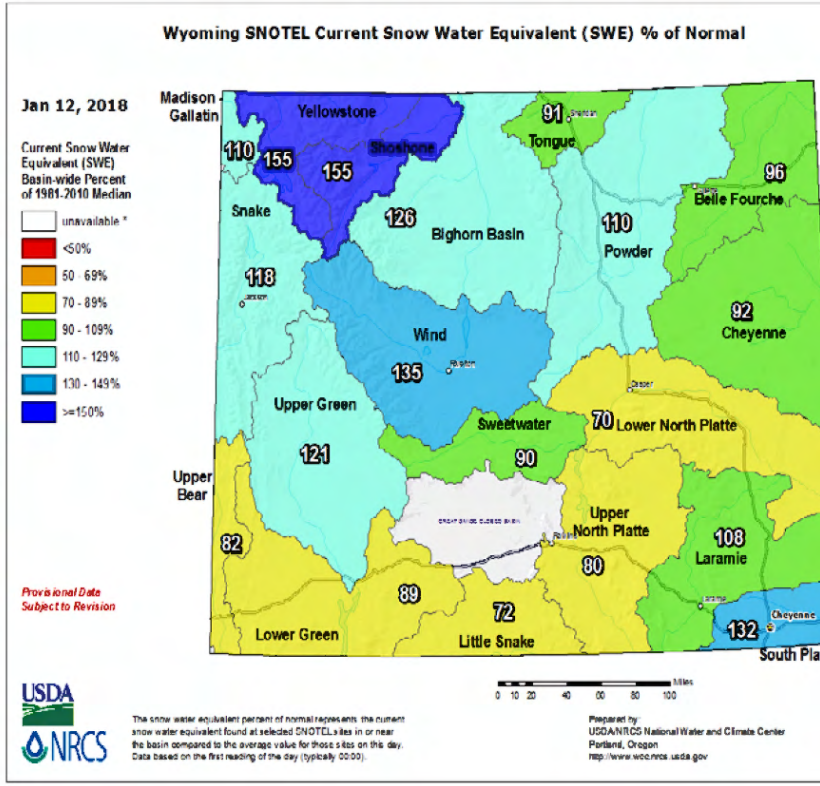
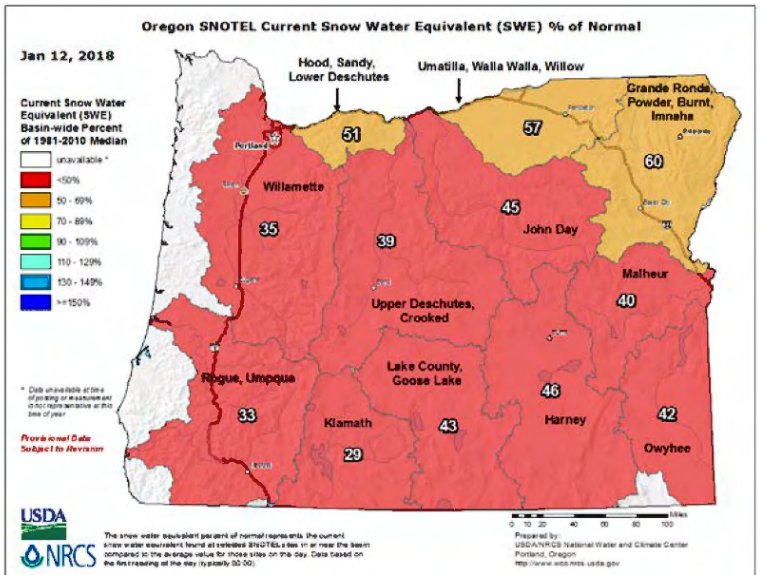
Idaho SNOTEL Current Snow Water Equivalent (SWE) % of Normal



Wyoming SNOTEL Current Snow Water Equivalent (SWE) % of Normal



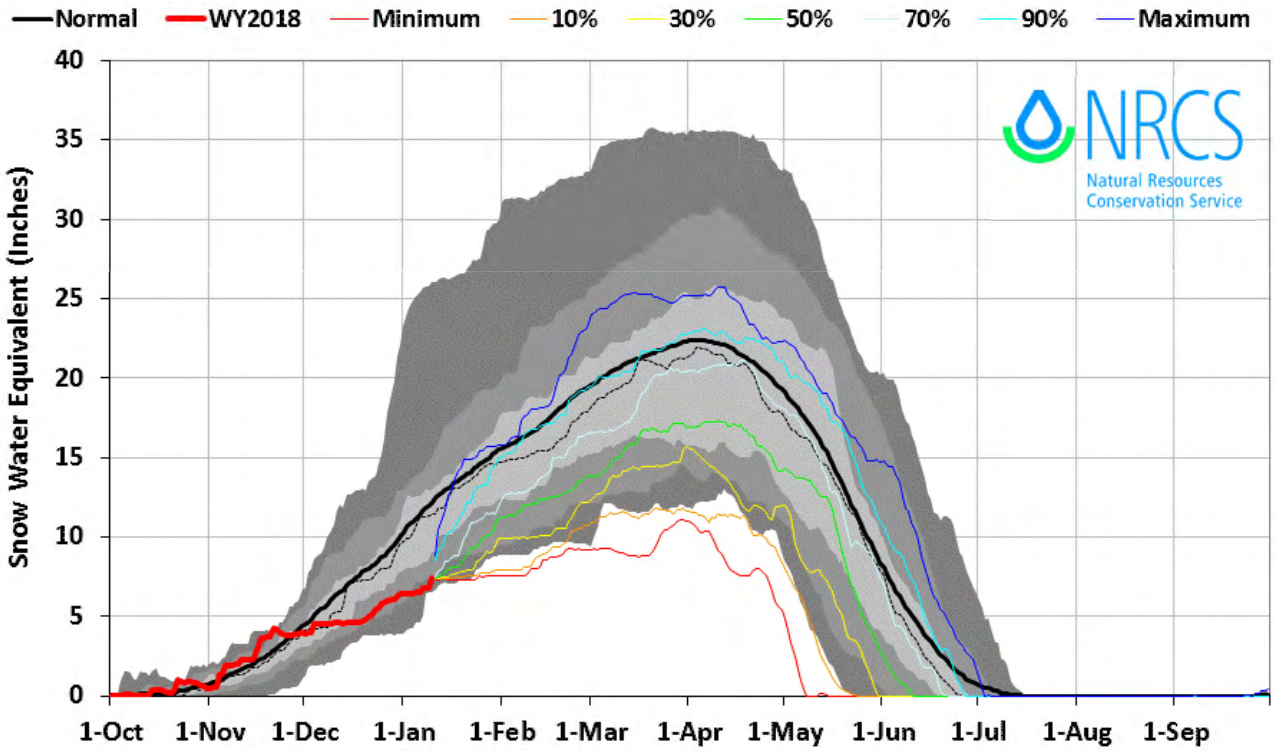
Oregon SNOTEL Current Snow Water Equivalent (SWE) % of Normal



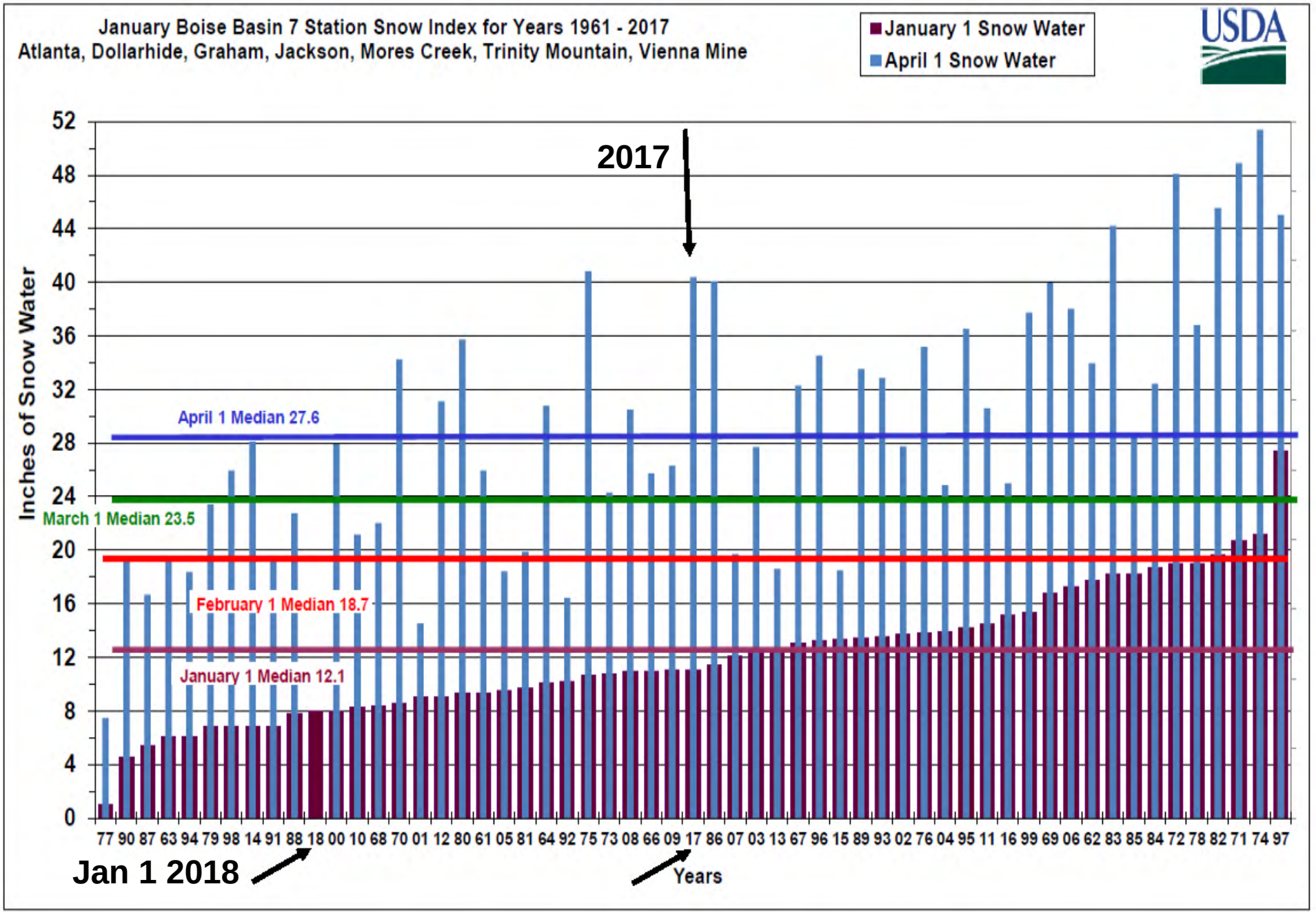
Natural Resources Conservation Service

Boise Basin 2018 Snow Water with Non-Exceedence Projections (10 sites)

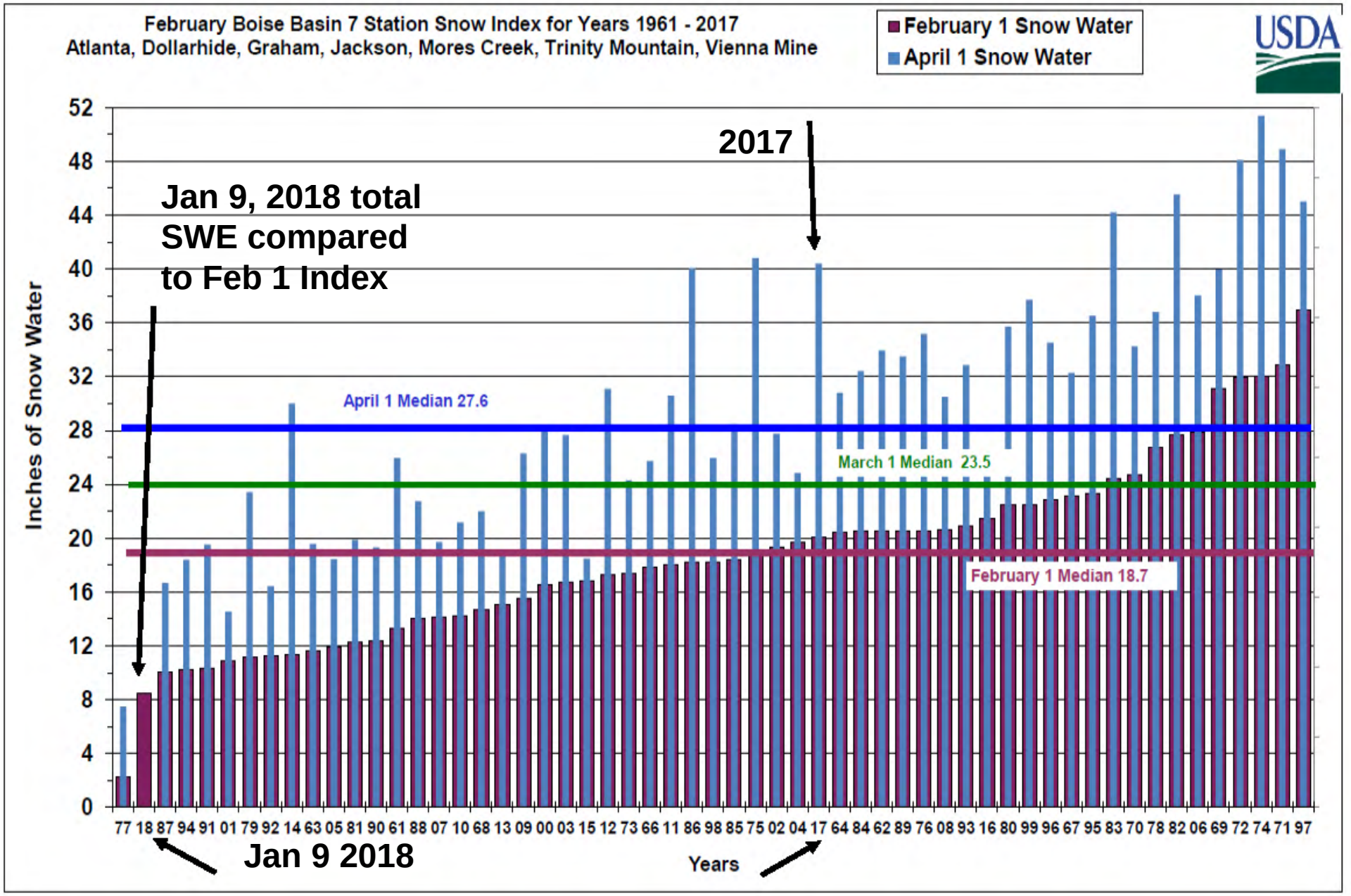
Based on Provisional SNOTEL data as of Jan 10, 2018



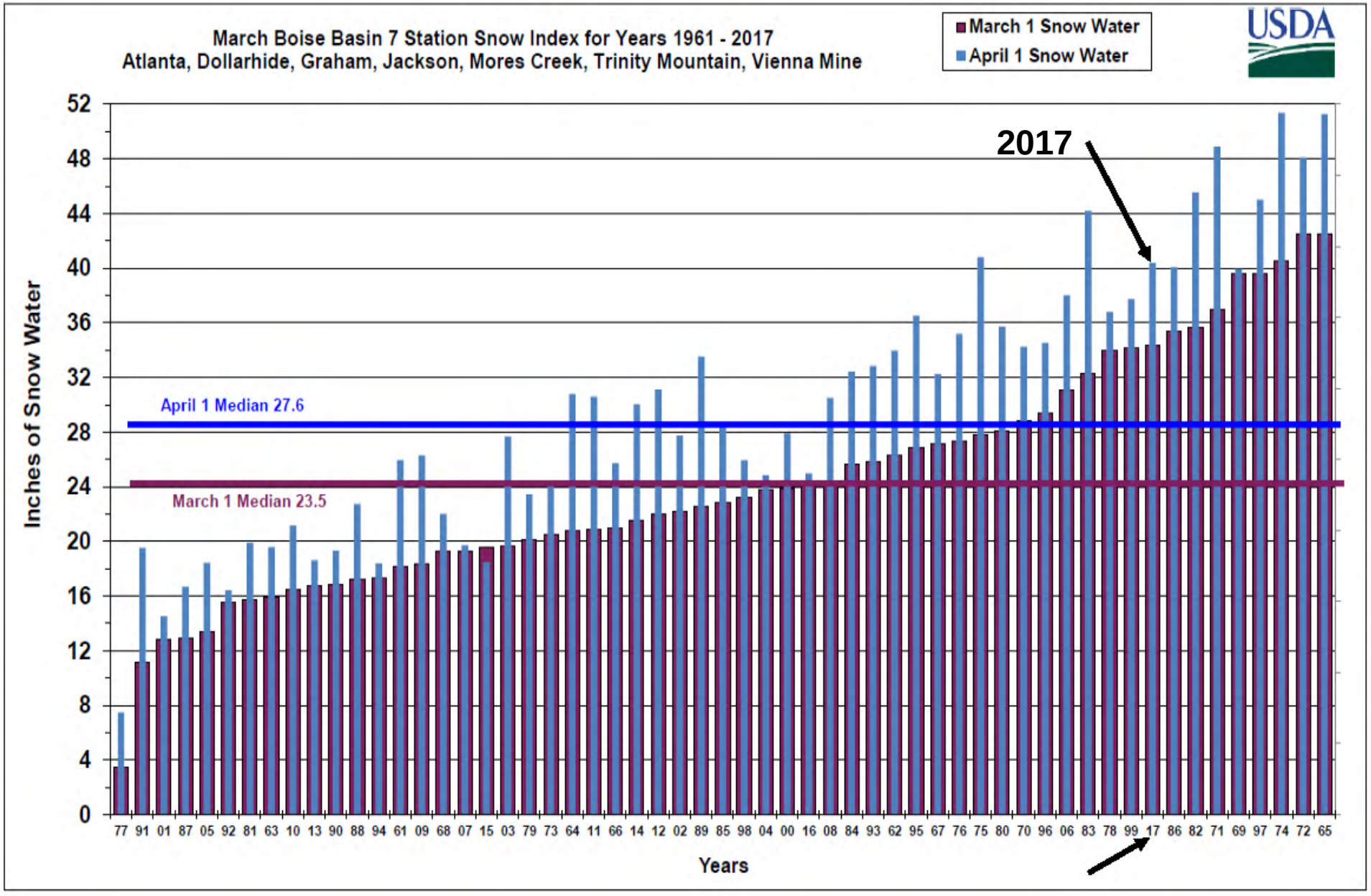
January 1 Boise Basin Snow Index - Chance of Recovery Graphs



Jan 9 SWE Compared to Feb 1 Boise Basin Snow Index 7 Stations

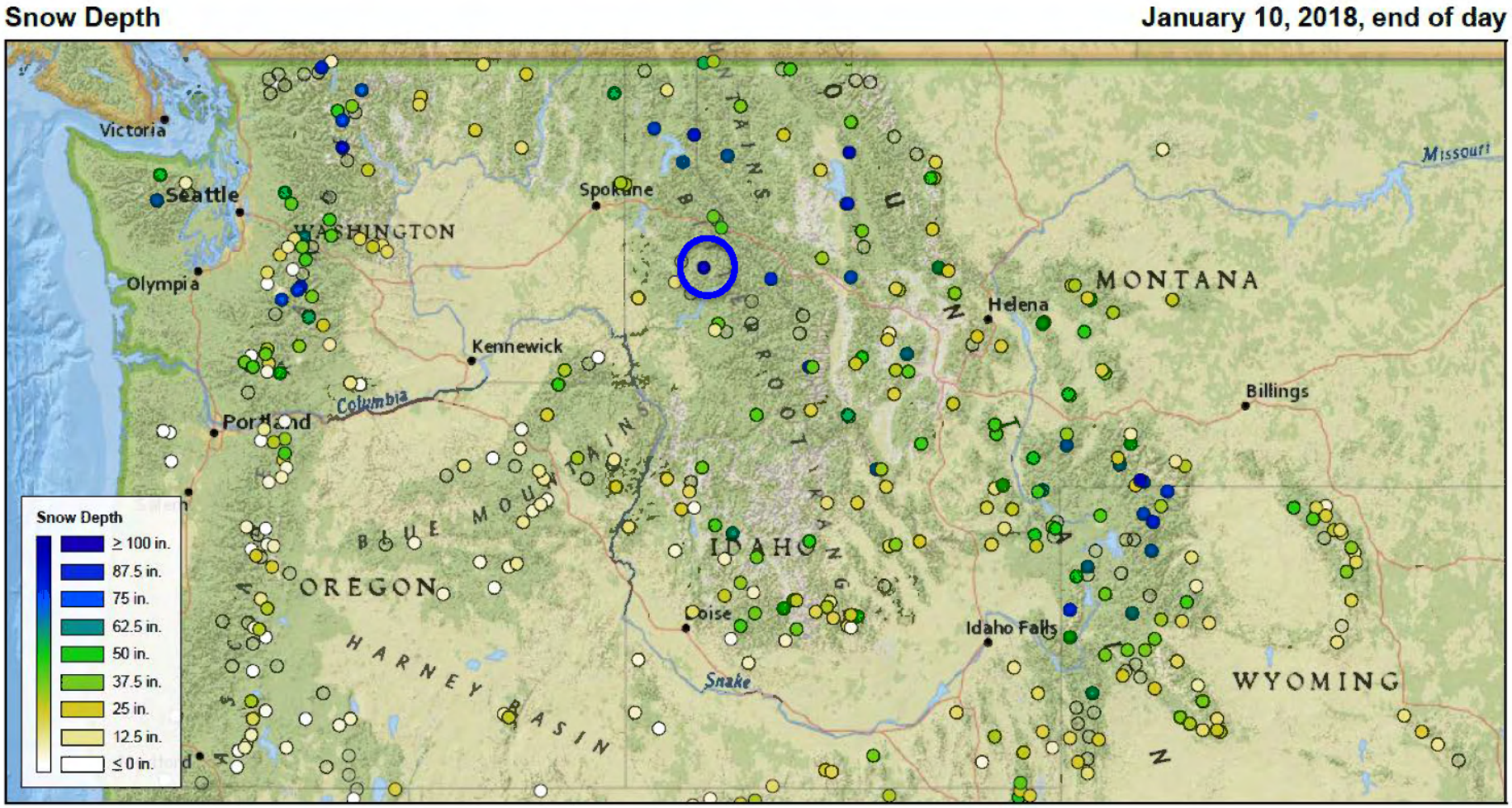


March 1 Boise Basin Snow Index 7 Stations

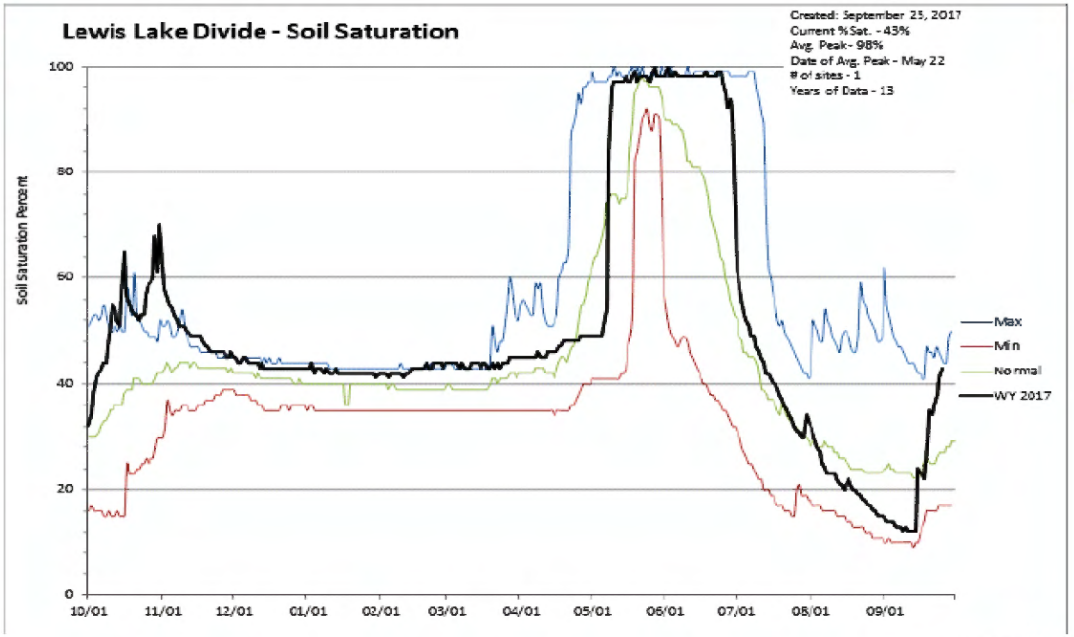


Lost Lake SNOTEL is about to exceed 100” of snow depth, first site in west-wide SNOTEL network to exceed 100”. This site is 96% of median SWE for today.

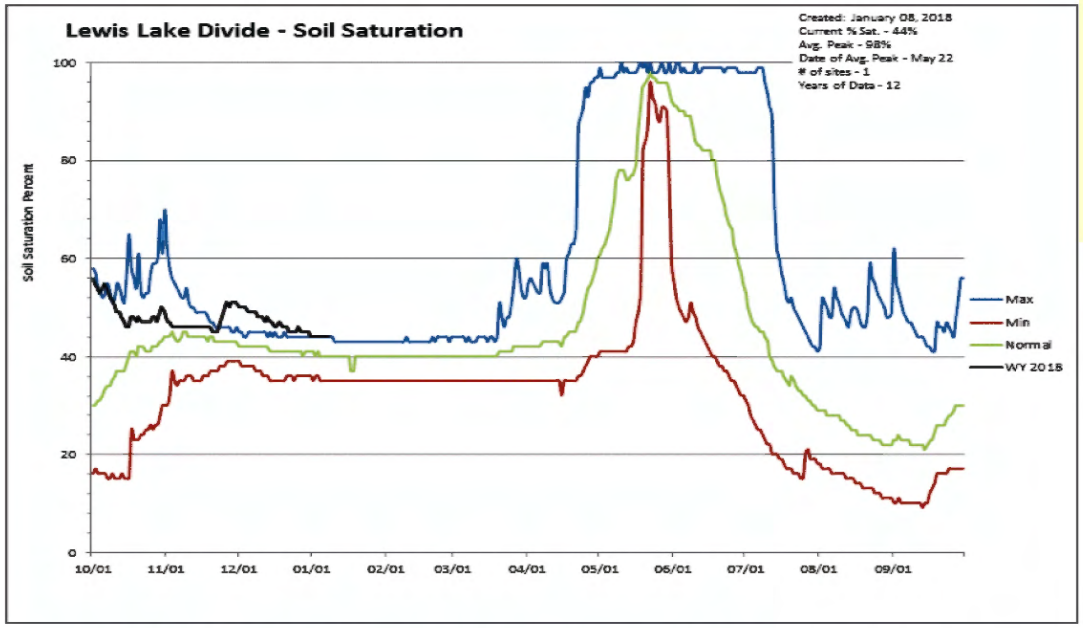
Other contestants:
Noise Basin (NW Montana) 91” Lyman Lake (North Cascades) 96”



September 2017



January 2018



The soil moisture at Lewis Lake Divide SNOTEL (Yellowstone Park, 5 mi N of South Entrance) is above normal for the site at this time of year. SM sensors at the site are installed at 2, 8, 20 inches depth

Soil Moisture
Lewis Lake Divide at max level based on 13 years of data

2017 black line

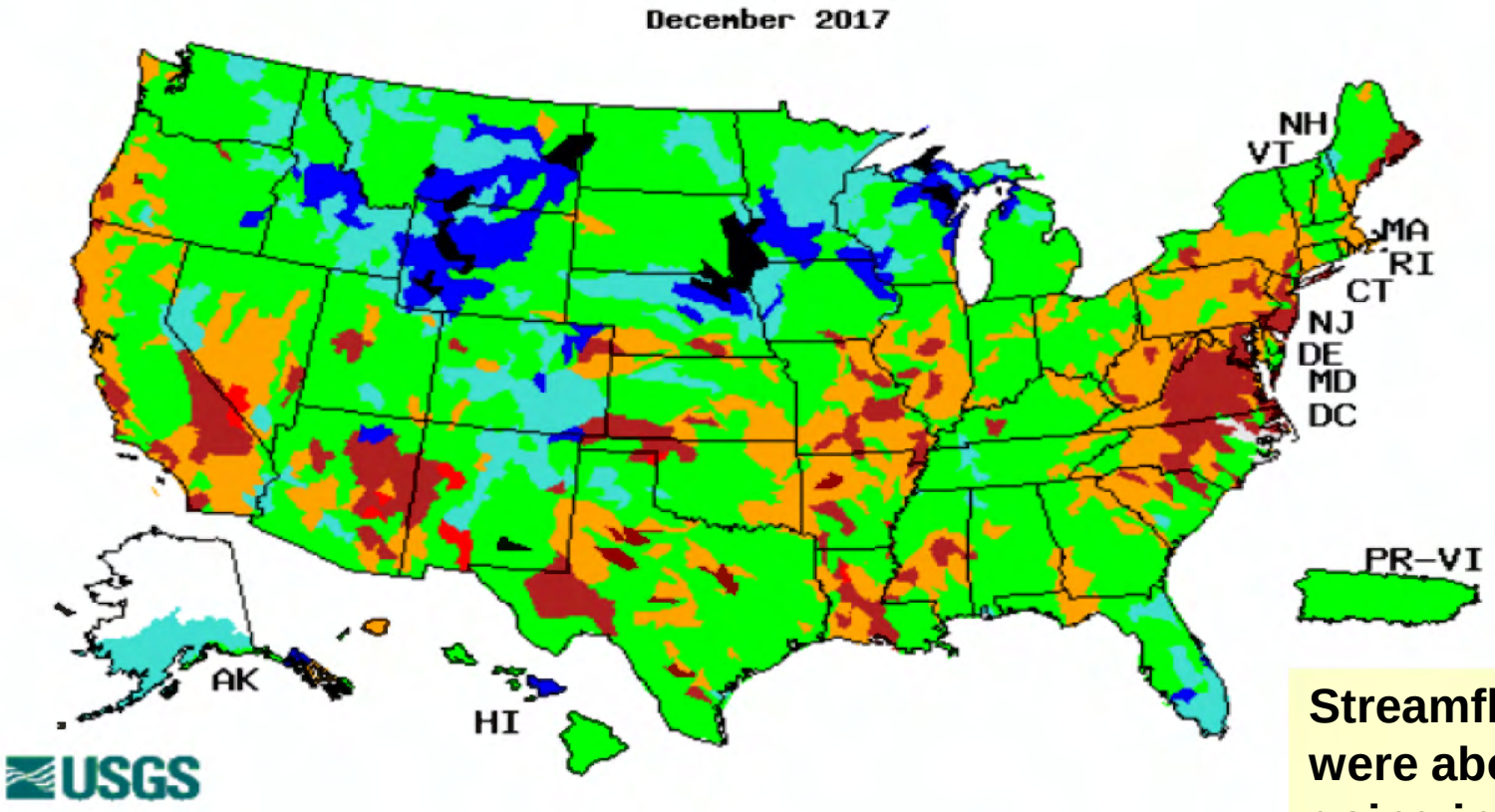
Max blue
Min red
Normal green

2018 black line

Natural Resources Conservation Service

Map of monthly-average streamflow for the month of year

December 2017



Search USGS streamgage

Streamflow levels were above average going into winter even with the dry December

Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	No Data
	Much below normal	Below normal	Normal	Above normal	Much above normal		

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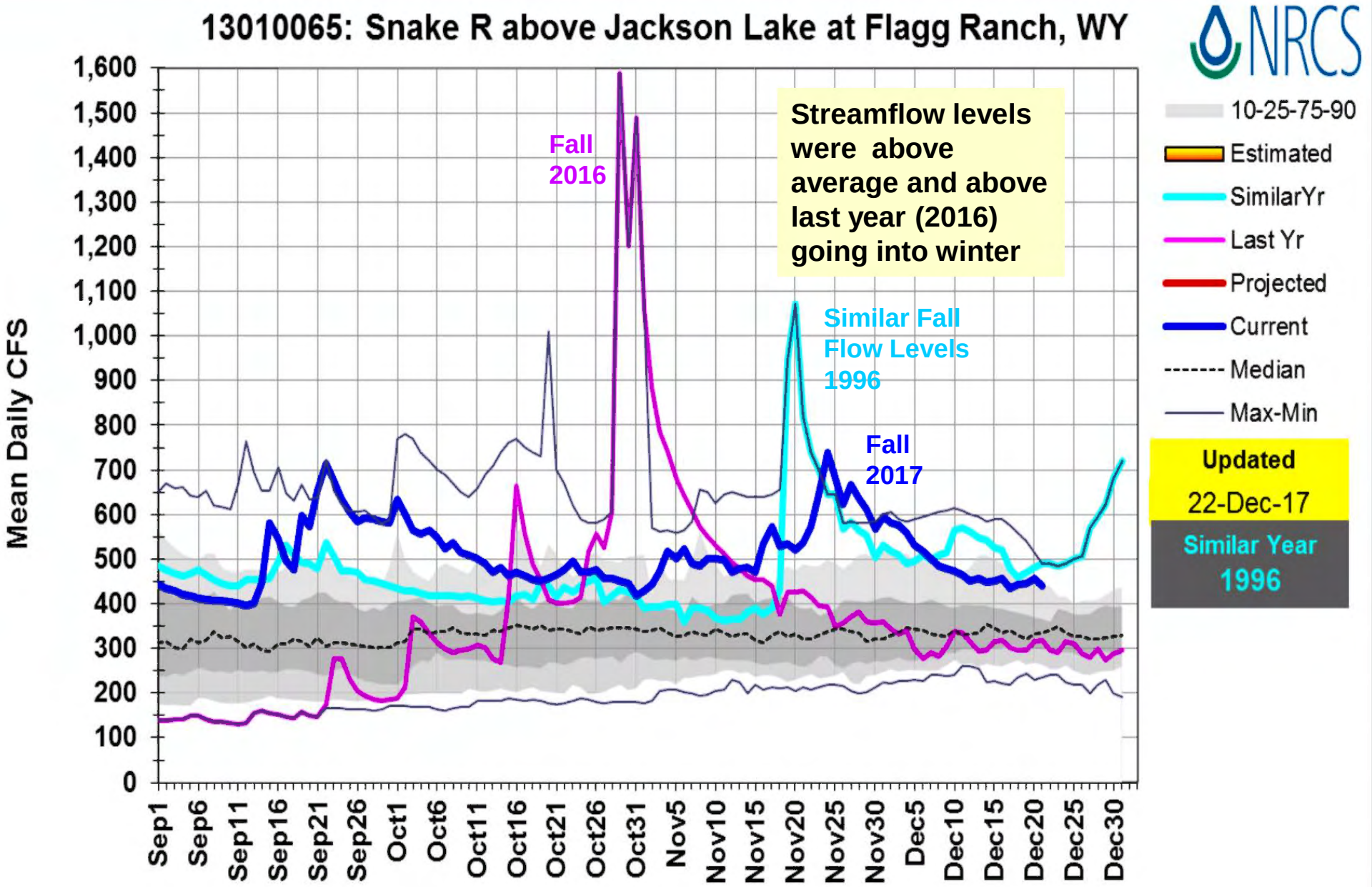

Reservoir Storage Projection for Spring 2018

As of October 30, 2017 -- Updated January 9, 2018 with end of month storage levels
Projected change in reservoir storage from Fall 2017 to start of runoff season in Spring 2018.

	Sep 30 storage KAF	Observed Oct 31 storage KAF	Observed Nov 30 storage KAF	Observed Dec 31 storage KAF	Projected Jan 31 Storage KAF	Projected Feb 28 storage KAF	Projected Mar 31 storage KAF	Estimated change in storage KAF
Boise Reservoir	603.3	584.9	663.5	719.5			800	197
Magic Reservoir	107.8	123.8	138.9	150.4			160	52
Little Wood Reservoir	12.7	12.4	17.5	21.4		22		9
Mackay Reservoir	38.1	38.1	37.6	33.6			20	-18
Jackson & Palisades Reservoir System	1909.8	1929.9	2016.0	2009.9			1900	-10
Oakley Reservoir	28.5	29.7	31.7	33.4		38		10
Salmon Falls Reservoir	92.8	92.1	92.7	93.1		97		4
Lake Owyhee	432.2	422.0	441.5	461.4	480			48
Bear Lake	1114.5	1090.7	1058.6	1035.5			1000	-115

Other basins, Spokane, Clearwater, Salmon, Weiser, Payette and Bruneau basins, the surface agricultural irrigation demand is not known or relevant. For the Henrys Fork basin, recent diversion data has not been loaded in our AWDB streamflow database.

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Summary Table: Amount of streamflow needed in 2018 for adequate surface irrigation supplies.

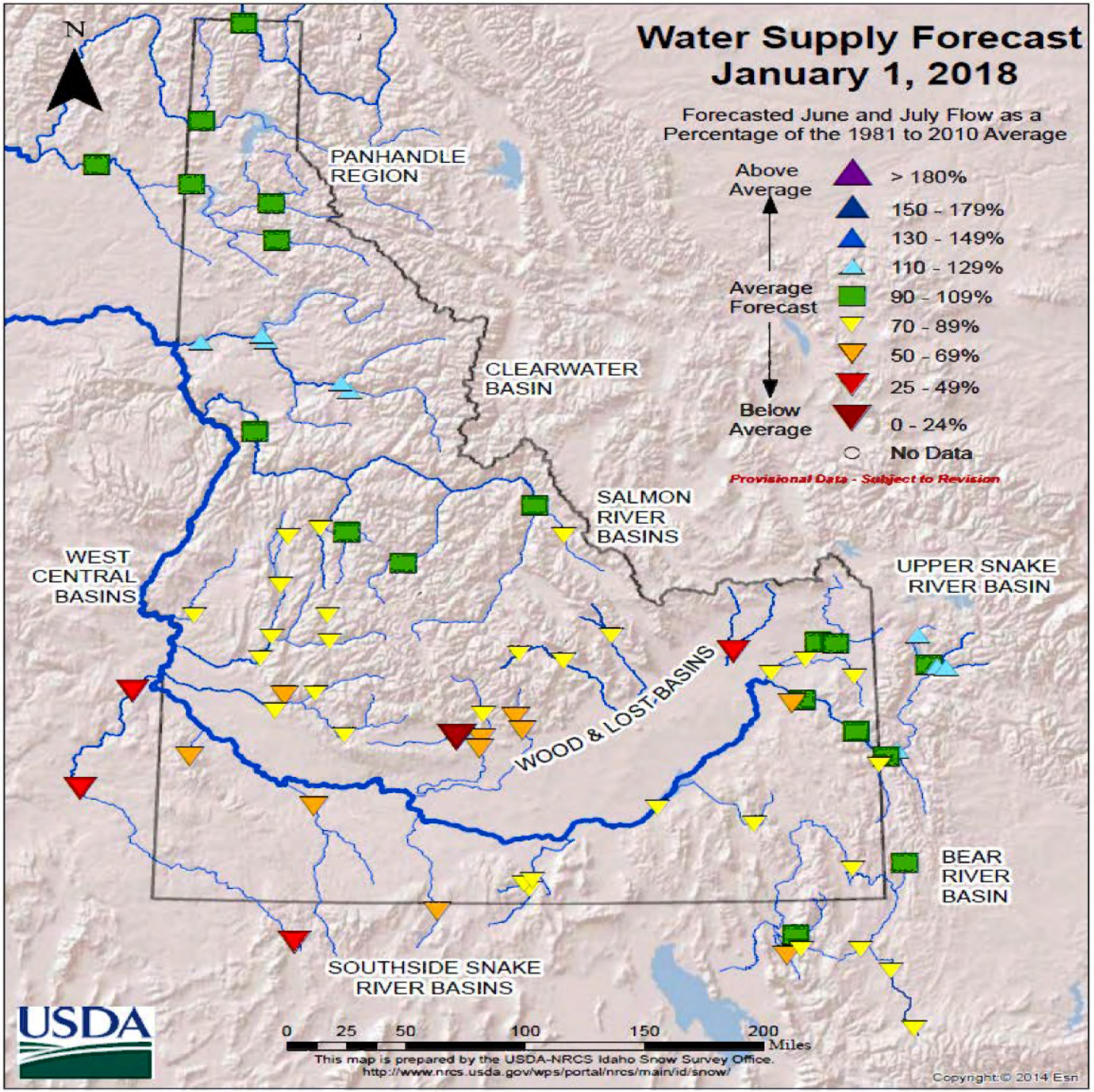
For complete summary see: Surface Water Supply Index (SWSI)
https://www.nrcs.usda.gov/wps/portal/nrcs/detail/id/snow/waterproducts/?cid=stelprdb1240689

Created: October 30, 2017
Updated: December 1, 2017

Fall reservoir carryover storage is used to project spring reservoir storage levels based on current conditions and recent trends. Then, by knowing the adequate irrigation water supply needed in your basin, the projected spring reservoir volumes are subtracted from the adequate irrigation supply to determine the volume of streamflow to marginally meet adequate surface irrigation supplies in 2018.

	Column 2 -	Column 3 =	Column 4	Col4/Col6 X 100= Col 5				
Column 1	2	3	4	5	6	7	9	
	Amount needed for adequate irrigation water supply	Projected end of month reservoir storage (Jan, Feb or Mar)	**2018 streamflow volume needed for adequate water supply**	**% of average streamflow to meet adequate irrigation supply in 2018**	1981-2010 average streamflow	Streamflow runoff period used in the analysis	2017 Streamflow Runoff	
Basin	KAF	KAF	**KAF**	**KAF**	KAF		KAF	% of average
Boise	1500	800	**700**	**51%**	1360	Apr-Sep	2460	181%
Big Wood	275	160	**115**	**43%**	265	Apr-Sep	707	267%
Little Wood	60	22	**38**	**41%**	92	**Mar-Sep**	**250**	**272%**
Big Lost	180	20	**160**	**107%**	150	Apr-Sep	310	207%
Little Lost	40	---	**40**	**118%**	34	Apr-Sep	48.5	143%
Teton	85	---	**85**	**44%**	193	Apr-Sep	285	148%
Snake (Heise)	4,400	1900	**2500**	**66%**	3,780	Apr-Sep	6116	162%
Oakley	50	38	**12**	**39%**	31	**Mar-Sep**	**48.6**	**157%**
Salmon Falls	110	97	**13**	**15%**	85	**Mar-Sep**	**157**	**185%**
Owyhee	575	480	**95**	**14%**	665	**Feb-Sep**	**1030**	**155%**
* **Bear River**	280	1000	**35**	**17%**	205	Apr-Sep	540	263%

* Based on **Bear River** reservoir allocation: only 245 KAF in storage can be used in 2018 and remaining 35 KAF to meet adequate irrigation supply is from runoff.


Water Supply Forecast
January 1, 2018
Forecasted June and July Flow as a Percentage of the 1981 to 2010 Average
Above Average
Average Forecast
Below Average
> 180%
150 - 179%
130 - 149%
110 - 129%
90 - 109%
70 - 89%
50 - 69%
25 - 49%
0 - 24%
No Data
Provisional Data - Subject to Revision
N
PANHANDLE REGION
CLEARWATER BASIN
SALMON RIVER BASINS
WEST CENTRAL BASINS
UPPER SNAKE RIVER BASIN
WOOD & LOST BASINS
BEAR RIVER BASIN
SOUTHSIDE SNAKE RIVER BASINS
USDA
0 25 50 100 150 200 Miles
This map is prepared by the USDA-NRCS Idaho Snow Survey Office.
http://www.nrcs.usda.gov/wps/portal/nrcs/main/id/snow/
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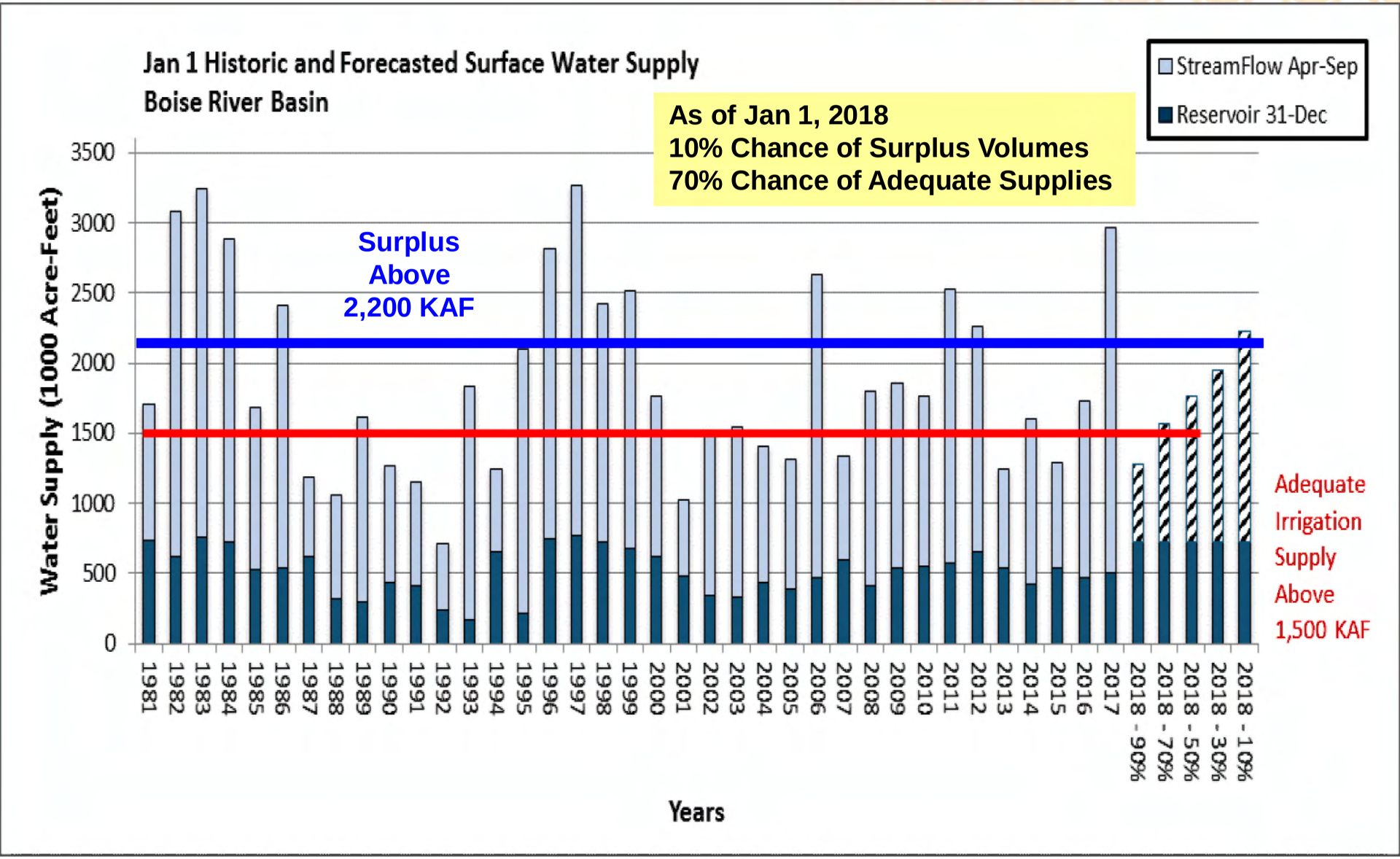
USDA

IDAHO SURFACE WATER SUPPLY INDEX (SWSI) January 1, 2018

BASIN or REGION	*SWSI Value*	*Most Recent Year With Similar SWSI Value*	*Agricultural Water Supply Shortage May Occur When SWSI is Less Than*
Spokane	-0.3	1981	NA
Clearwater	1.6	2017	NA
Salmon	0.1	2010	NA
Weiser	-1.9	2014	NA
Payette	-1.0	2016	NA
Boise	0.1	2016	-1.5
Big Wood	0.8	2012	0.7
Little Wood	-0.1	2010	-1.3
Big Lost	-0.1	2005	0.7
Little Lost	0.1	2012	1.3
Teton	0.8	2015	-3.9
Henrys Fork	0.8	2000	-1.5
Snake (Heise)	1.7	2009	-1.8
Oakley	1.4	2007	0.7
Salmon Falls	1.7	1996	-0.7
Bruneau	-0.5	2004	NA
Owyhee	0.5	2012	-2.2
Bear River	2.5	1997	-3.7

Boise Basin January 1 SWSI with Adequate Irrigation Supply & Surplus Threshold



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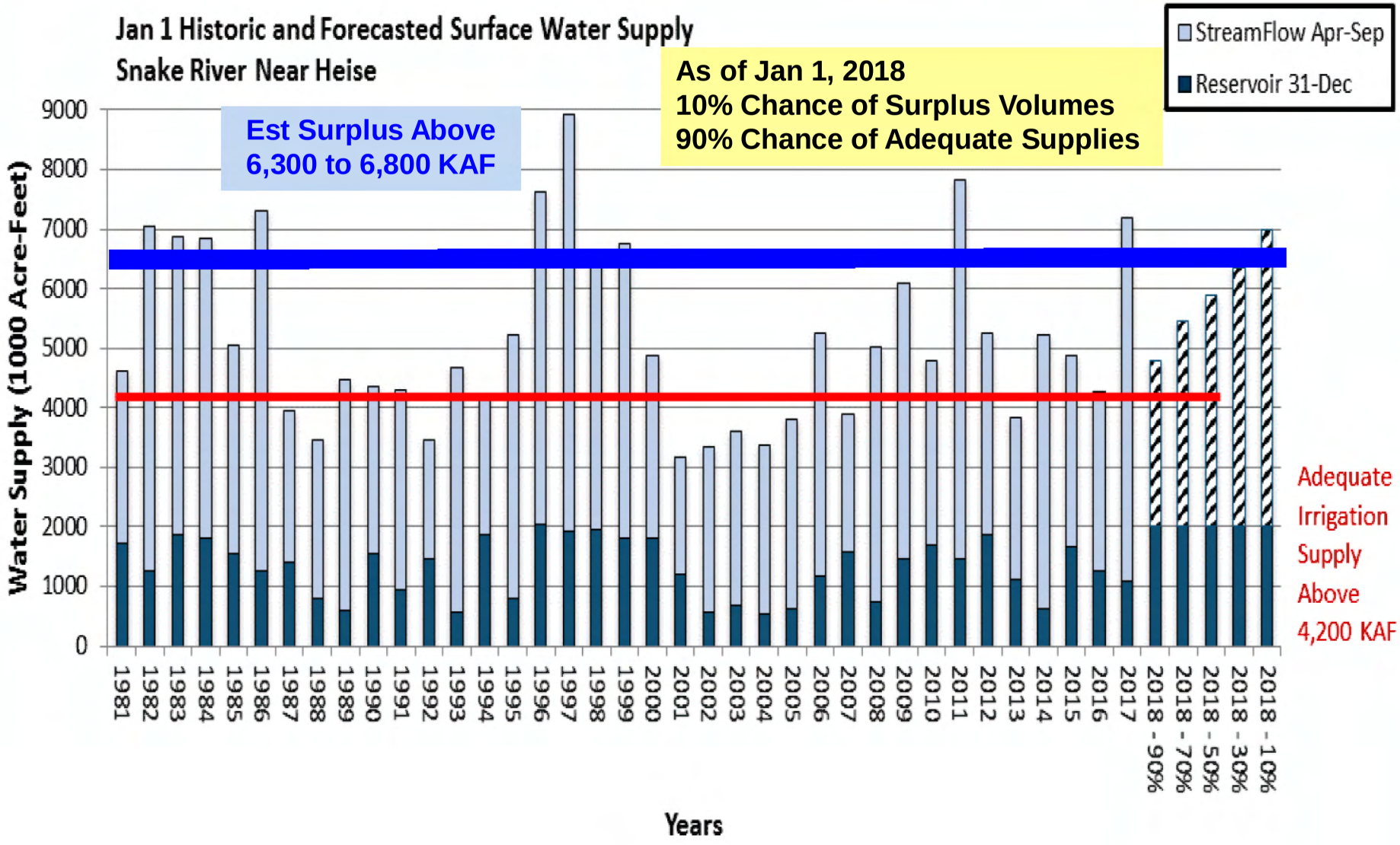
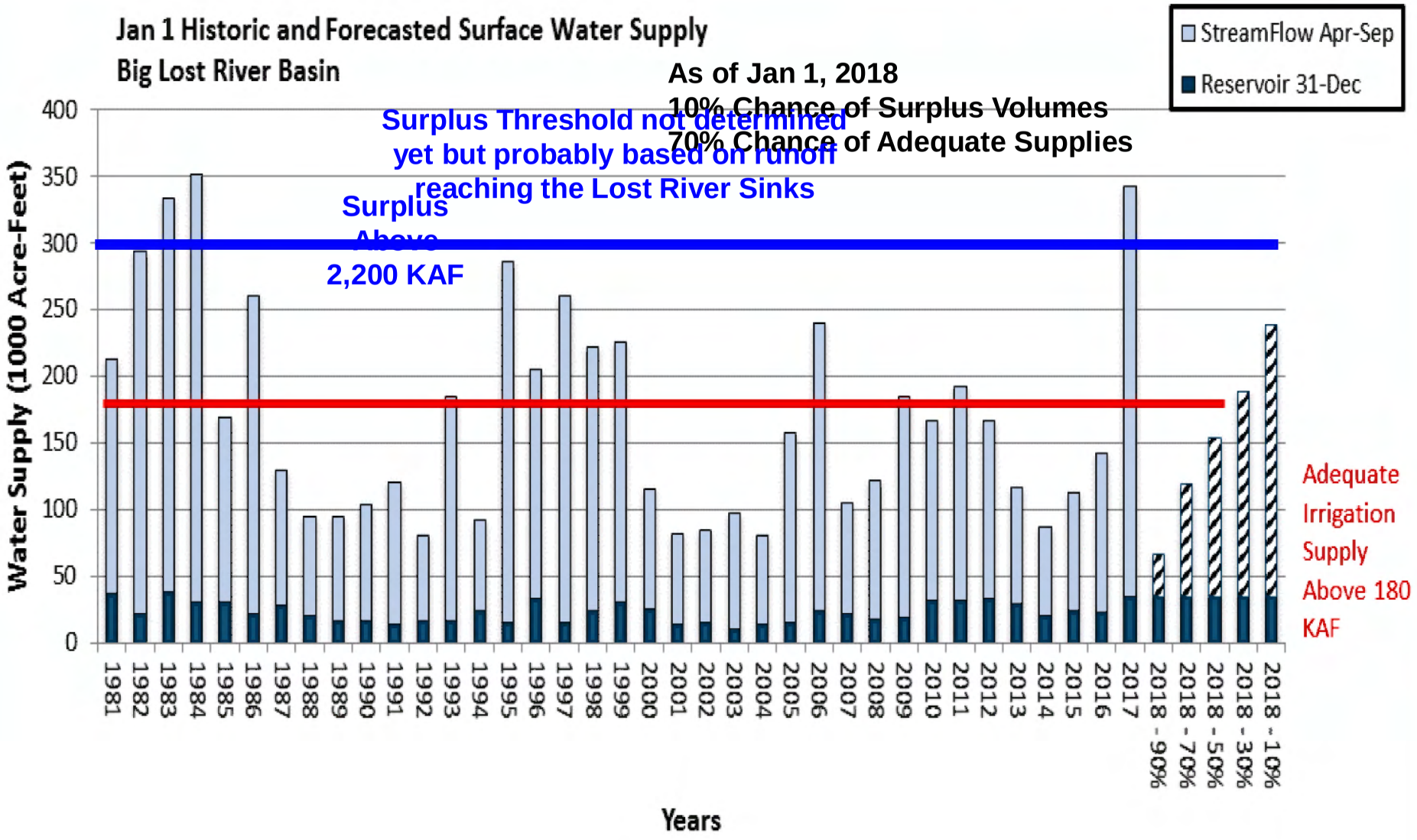
Analysis based upon CFS flow >25,000 @ Blackfoot and volume > 6,300-6,800 KAF

Snake Basin January 1 SWSI with Adequate Irrigation Supply & Surplus Threshold



Big Lost Basin January 1 SWSI with Adequate Irrigation Supply & Surplus Threshold



USDA

Big Lost River Basin SWSI

Adequate Water Supply Greater than 0.7 SWSI or 180 KAF

Station ID	Station Name	Period	Data Type	Years	# of Years
13127000	Big Lost R blw Mackay Reservoir	Apr-Sep	strm	1981-2017	37 U
13126000	Mackay Reservoir	31-Dec	resv	1981-2017	37 U

ENSO Classification
SE Strong El Nino - EN Mild El Nino - N Neutral - LN Mild La Nina - SL Strong La Nina

Surplus?

Shortages

Rank	Year	Enso	Stream Flow Apr-Sep	Reservoir 31-Dec	Streamflow + Reservoir Sum	Non-Exceedance Probability	SWSI
1	1984	N	321	31	351	97%	3.9
2	2017	LN	309	34	343	95%	3.7
3	1983	SE	296	38	333	92%	3.5
4	1982	N	272	21	294	89%	3.3
5	1995	SE	272	15	287	87%	3.1
6	1986	N	239	21	260	84%	2.9
7	1997	N	244	15	260	82%	2.6
8	2006	N	216	24	240	79%	2.4
2018 10% Chance Exceedance Forcast		**LN**	**205**	**34**	**239**	**78%**	**2.3**
9	1999	SL	196	30	226	76%	2.2
10	1998	SE	198	24	222	74%	2.0
11	1981	N	176	36	213	71%	1.8
12	1996	N	171	33	205	68%	1.5
13	2011	SL	160	32	192	66%	1.3
2018 30% Chance Exceedance Forcast		**LN**	**155**	**34**	**189**	**64%**	**1.2**
14	1993	EN	169	16	185	63%	1.1
15	2009	N	166	19	184	61%	0.9
16	1985	N	139	30	169	58%	0.7
17	2012	LN	134	33	167	55%	0.4
18	2010	EN	135	31	166	53%	0.2
19	2005	EN	142	16	158	50%	0.0
2018 50% Chance Exceedance Forecast		LN	120	34	154	49%	-0.1
20	2016	SE	119	23	143	47%	-0.2
21	1987	N	101	28	129	45%	-0.4
22	2008	N	105	17	122	42%	-0.7
23	1991	N	106	14	120	39%	-0.9
2018 70% Chance Exceedance Forcast		**LN**	**85**	**34**	**119**	**38%**	**-1.0**
24	2013	N	88	28	117	37%	-1.1
25	2000	N	89	26	115	34%	-1.3
26	2015	EN	89	24	113	32%	-1.5
27	2007	EN	83	22	105	29%	-1.8

SNOTEL Status

North Idaho

- Mica Creek & Pierce RS – back online this week
- Elk Butte & Cool Creek – helicopter flight end of January

Central Idaho

- Smiley Mountain precipitation problem fixed

Southside & Upper Snake

- No issues

Staff Directory

Program Manager and Staff Supervisor

Name	Position	Phone	Email
Shawn Nield	State Soil Scientist	208-378-5728	Shawn Nield

Office Staff

Office Staff

Name	Position	Phone
Ron Abramovich	Water Supply Specialist	208-378-5741
Earl Adsley	Pathways Student Trainee (Hydrologist)	208-378-6921
Tina Andry	Pathways Student Trainee (Hydrologist)	208-378-6983
Danny Tappa	Hydrologist/Acting Data Collection Officer	208-378-5740
Vacant	Data Collection Officer/Senior Hydrologist	
Vacant	Hydrologist	

Field Staff

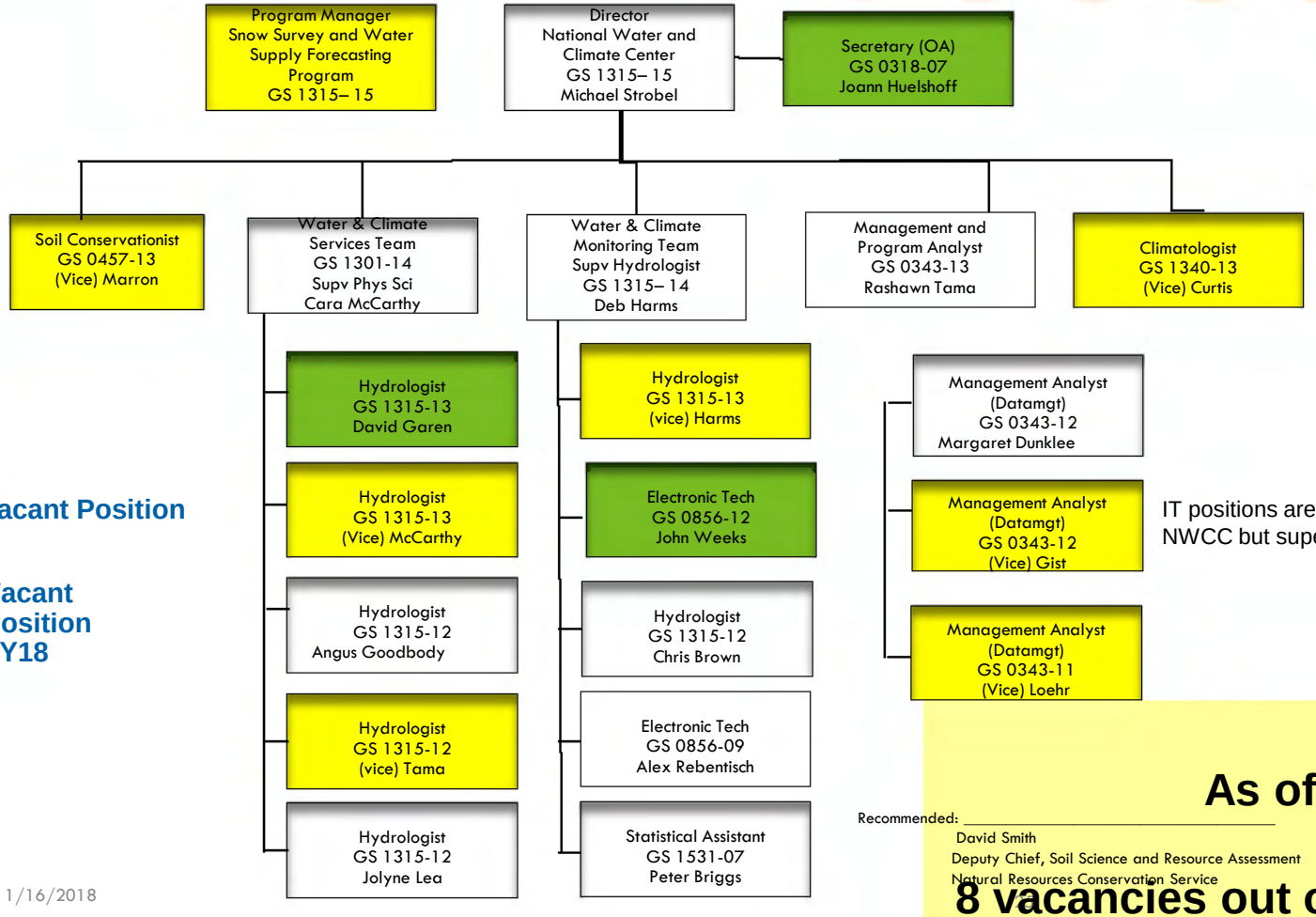
Name	Position	Phone	Email
John Wilford	Electronics Technician	208-685-6943	John Wilford
Tom Beers	Field Hydrologist	208-685-6942	Tom Beers
Vacant	Hydrologic Technician		

Idaho Snow Survey Office
As of Jan. 2018

3 vacancies out of 7 FTEs

2 newer Pathways Trainee Hydrologists

Resources Inventory Division (National Water and Climate Center) – Working Org Chart



Vacant Position

Vacant Position FY18

IT positions are funded by NWCC but supervised by ITC

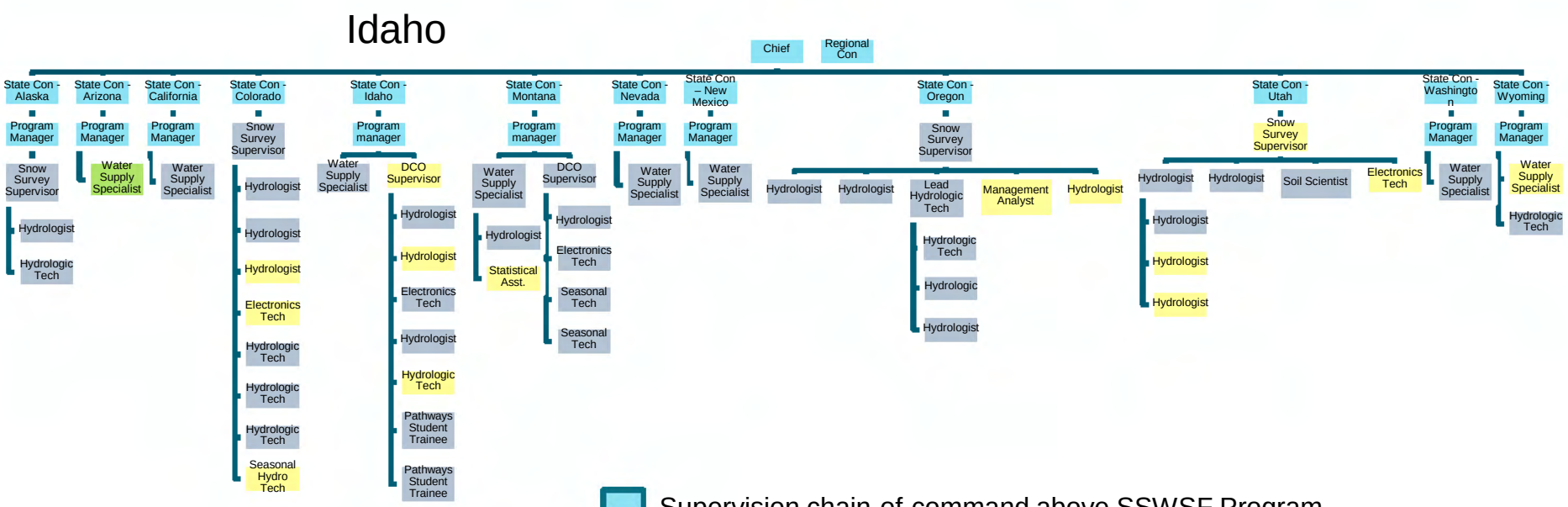
Recommended: _____
David Smith
Deputy Chief, Soil Science and Resource Assessment
Natural Resources Conservation Service

1/16/2018

NWCC
As of Jan. 2018
8 vacancies out of 21 FTEs

Summer 2018
11 vacancies out 21 FTEs

Snow Survey Program State Structure



Supervision chain-of-command above SSWSF Program

Permanent SSWSF Program positions

Permanent SSWSF Program positions presently vacant

Permanent SSWSF Program positions vacant in FY18

West-wide Snow Survey Program
As of Jan. 2018

About 1/3 vacancies of the 71 FTEs

Natural Resources Conservation Service

Questions
Comments
Discussions
Corrections

Big Lost River at Arco
Dec 21, 2017