NWS Form E-5 U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL WEATHER SERVICE **MONTHLY REPORT OF HYDROLOGIC CONDITIONS**	**HYDROLOGIC SERVICE AREA:** Pocatello, Idaho **REPORT FOR:** **MONTH:** December **YEAR:** 2012
TO: Hydrologic Operations Division, W/OH2 National Weather Service National Oceanic and Atmospheric Administration Silver Spring, Maryland 20910	**SIGNATURE** Corey Loveland Service Hydrologist **DATE:** January 8, 2013
When no flooding occurs, include miscellaneous river conditions, such as significant rises, record low stages, ice conditions, snow cover, droughts and hydrologic products issued (NWS Instruction 10-924).	

X **An X in this box indicates that <u>no</u> flooding has occurred for the month within this hydrologic service area.**

Overview

Overall, December brought similar amounts of precipitation, compared to October and November. December resulted in higher than normal precipitation in the central mountains in the higher elevations and in the southern portion of Idaho in Cassia County even into the Bear River basin. The mountainous higher elevations (>7000 ft.) in the Hydrologic Service Area received 25 to 35 inches of snow this past month. The northeast corner of the state in the Teton and upper Snake River basins received near to below normal precipitation for December. As indicated below in the NRCS graphics, the month-to-date precipitation percents of normal for December were extremely low across the state as compared to November's values. The only basins within the HSA to increase in snow water equivalent (SWE) for the month of December were the Willow, Blackfoot and Portneuf basins to the southeast (opposite to November where they were the driest basins) and the Goose Creek and Salmon Falls basins in the central south. But, looking at the season-to-date, the Big Lost basin is currently at 163% of normal (the highest basin snowpack in the state) which has over two-thirds of its early April seasonal peak.

Looking at SWE value changes at SNOTEL sites in December, most basins increased around 2 to 6 inches of SWE during the month with the Lost River basin averaging 5 to 6 inches and the south central mountains and Bear River basin averaging around 3 inches of swe accumulation.

As a contrast to last month, December brought with it very cold temperatures. As far as the three-month Climate Prediction Center outlook is concerned, we stand to have an equal chance of normal temperatures (with a greater chance of warmer temperatures in the southern part of the HSA) and a 33% chance of higher than normal precipitation in the northern part of the HSA (with equal chance in the southern part of the state).

Of the data available for the month, the highest 24-hour precipitation total was 1.70 inches on the 5th day of the month at the Island Park site, which also received the greatest monthly total snow accumulation at 12.0 inches on the 17th day of the month. The station reaching the highest temperature was the Massacre Rocks State Park station at 61°F on the 2nd with the lowest temperature being recorded at the Island Park station (again) at a very cold -20°F on the 19th.

During December, reservoirs increased capacity overall by around 9% in the upper Snake River Basin system (an increase of over 378 KAF over the month). Most notable change was the Palisades reservoir with an

increase of 32% of capacity and the two reservoirs that dropped pool levels were Milner and Magic reservoirs at -4% and -3% of capacity, respectively. Ririe reservoir and Jackson Lake are currently at 128 and 127 percent of average capacity according to NRCS data. American Falls reservoir has recuperated from the summer pool recession and has increased to about half full. Overall, the area's reservoir levels are currently sitting well for this part of the accumulation season.

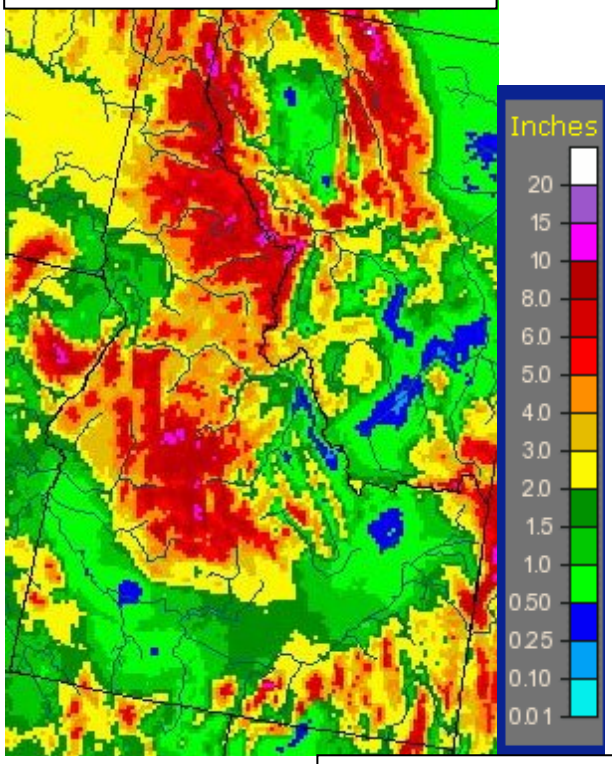
Monthly average streamflow has remained just below to near normal across the HSA with slight improvements during December especially in the upper end of the Snake where there are three station reporting greater than 76 percent of normal. Some stream gages have begun to ice up giving erroneous readings as very cold temperatures persist. As you can see from the USGS monthly streamflow comparison maps below, a great improvement over the entire HSA has occurred over the course of last month. So far, we are tracking a little better than we did last year in December of 2011.

Although not as a drastic improvement as November, December's additional precipitation and subsequent soil moisture improvements has improved drought categories across the state from where no drought conditions exist, up to the D1 category (Moderate Drought). The category of no drought conditions improved by about 7%, as did the category D0 by the same amount, category D1 improved by about 2% and the D2 category remained the same since last month's assessment. The U.S. Seasonal Drought Outlook forecasts a persistence of drought conditions over most of the HSA, with only a slight improvement in the northeast corner of Idaho. The recent added moisture to the soils has improved to around a 20 mm anomaly as well as the Palmer Drought Severity Index graphic, below, shows a soil moisture trending from near normal to very moist across the HSA.

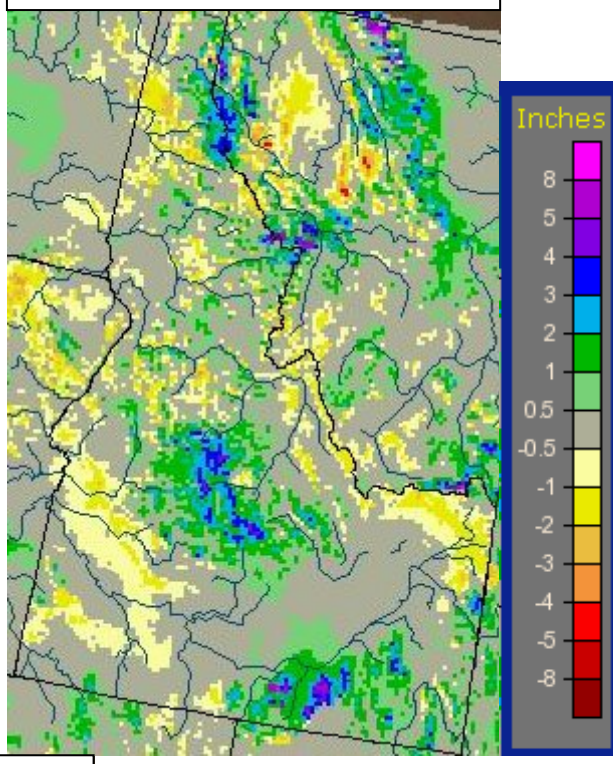
The Idaho NRCS Snow Survey office came out with their January 1st Idaho Surface Water Supply Index (SWSI) which combines streamflow forecasts and reservoir storage, where appropriate. This rating reflects overall water availability in the basins and are mostly used for irrigational planning purposes. The highest rating within the HSA, is the Big Lost River basin which is given a SWSI value of 2.3 (above normal water supply) with the Oakley basin rated the lowest at 0.0 (normal or 50% chance of exceedance). From a water supply stance, the hydrologic basins within the HSA are currently on track to near to above normal snowpack conditions. The trend continues where there is a distinct elevation band, which is higher than normal, of where thicker snowpacks are accumulating as compared to historical accumulation leaving less snowpack in the lower elevations than normal. Starting this water supply season, the NRCS, NWRFC, and CBRFC have transitioned to the new 30-yr normal (1981-2010) to produce the water supply forecasts. For more information on the Idaho Water Supply Outlook please go to:
ftp://ftp-fc.sc.egov.usda.gov/ID/snow/watersupply/bor/2013/borid113.pdf
See NWRFC, CBRFC, and NRCS beginning of water supply season forecasts below.

Precipitation: (***Note**: Beginning October 2012, the NWS AHPS precipitation website began using the updated PRISM Normals based on 1981-2010 data and not the previous 1971-2000 data.)

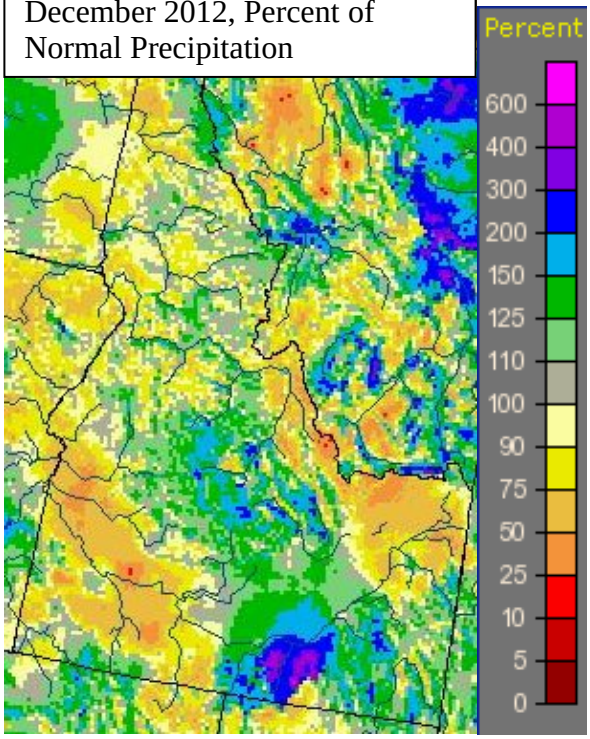
December 2012, Observed Precipitation



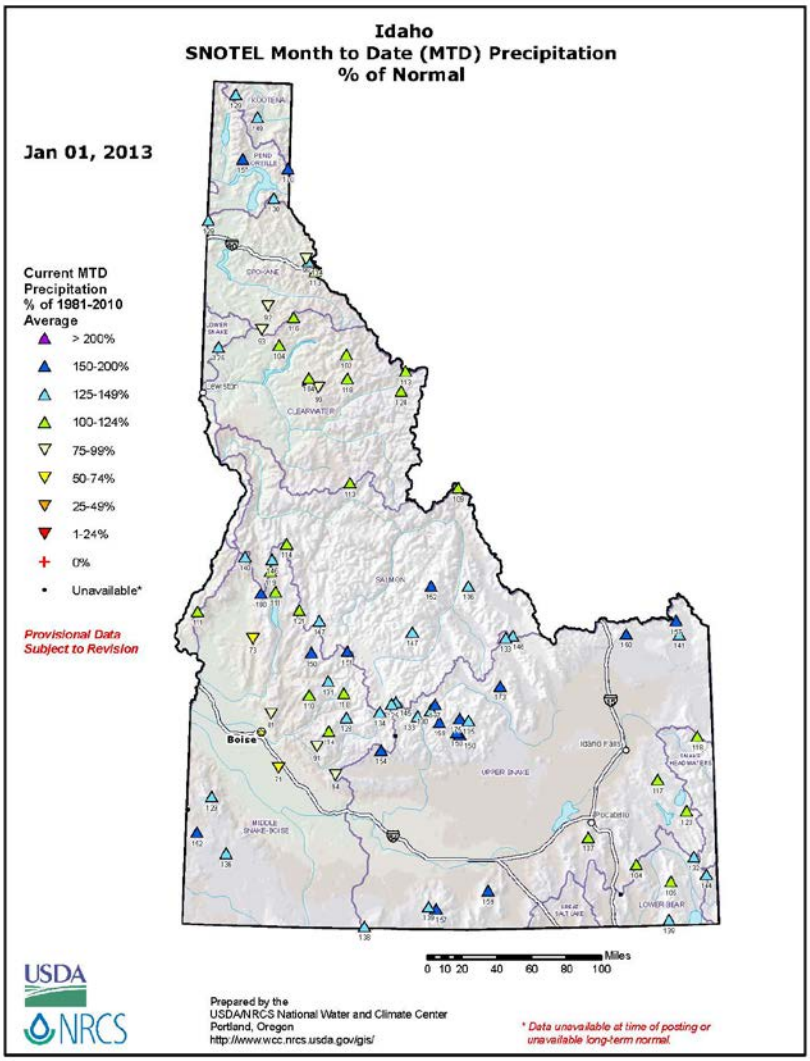
December 2012, Departure from Normal Precipitation



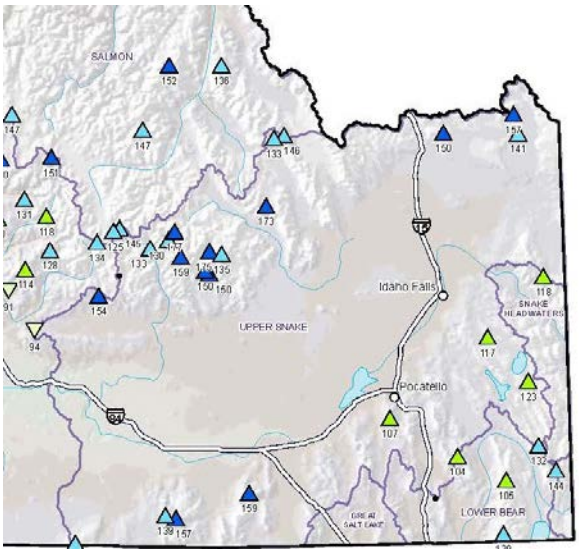
December 2012, Percent of Normal Precipitation



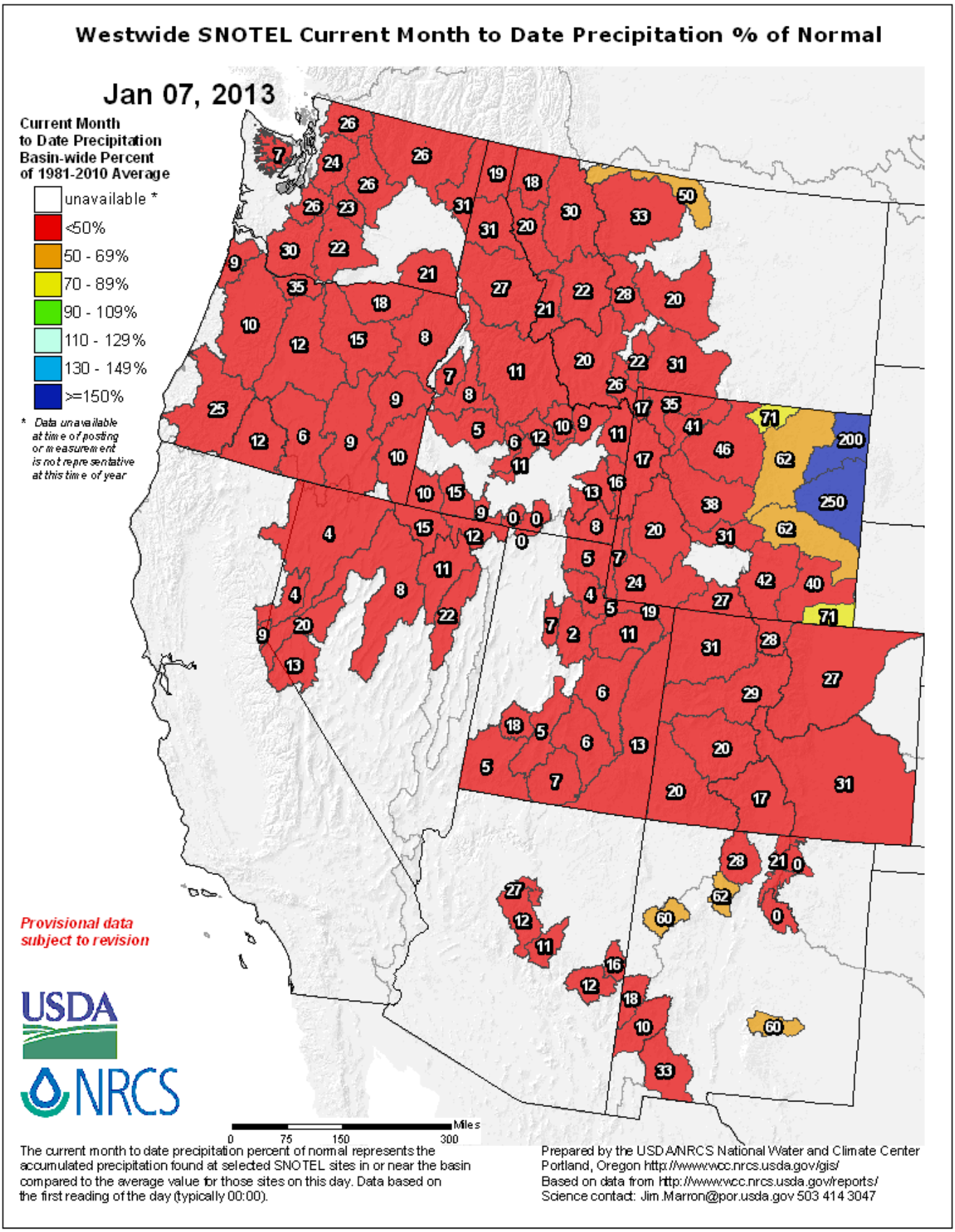
http://water.weather.gov/precip/index.php



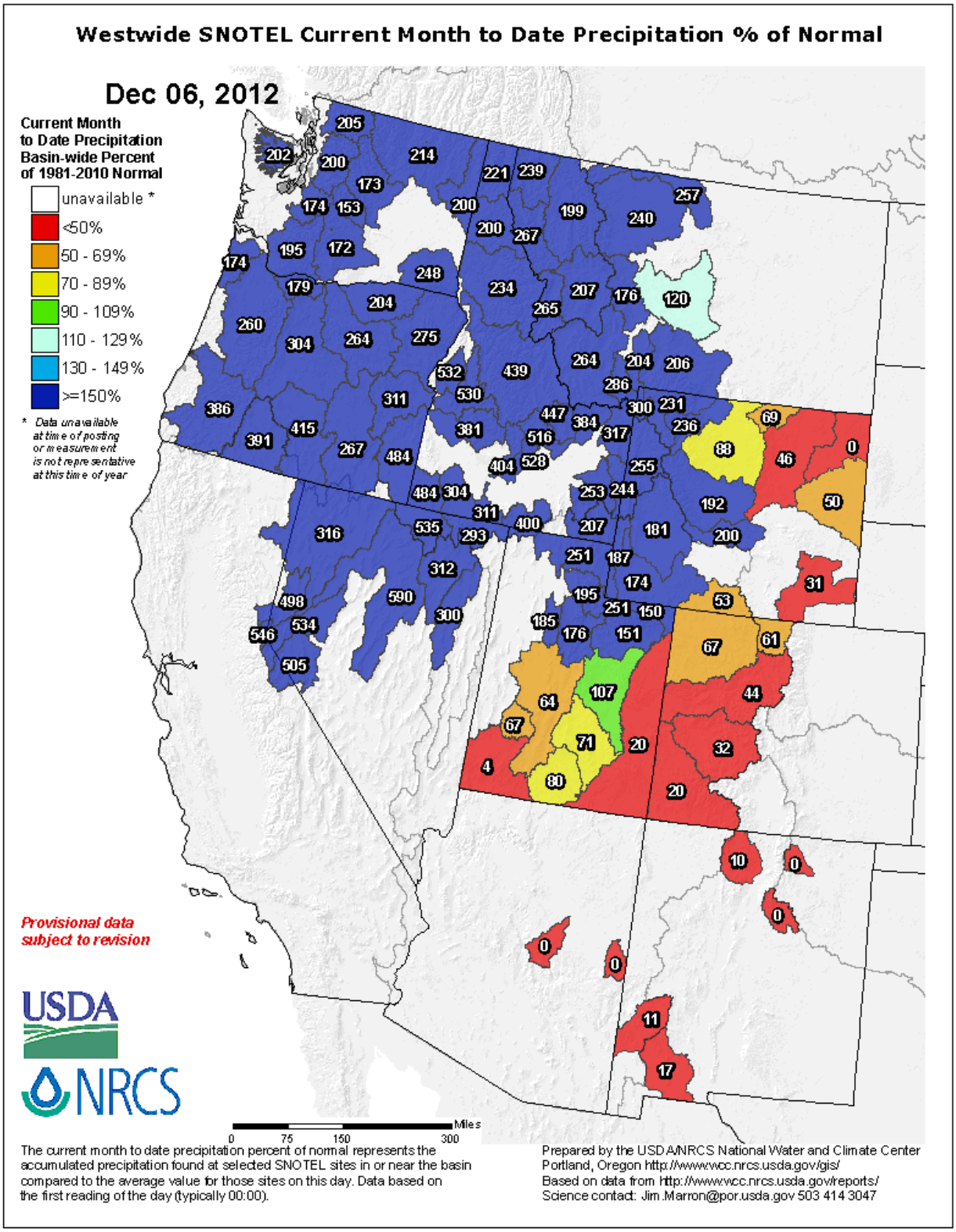
SNOTEL MTD % of Normal Precipitation for end of December 2012 (image below is cropped from left image)



ftp://ftp.wcc.nrcs.usda.gov/data/water/wcs/gis/maps/1stmonth/id/prec/id_mtdprecpctnormal_Jan.pdf


Westwide SNOTEL Current Month to Date Precipitation % of Normal
Jan 07, 2013
Current Month to Date Precipitation Basin-wide Percent of 1981-2010 Average
unavailable *
<50%
50 - 69%
70 - 89%
90 - 109%
110 - 129%
130 - 149%
>=150%
* Data unavailable at time of posting or measurement is not representative at this time of year
Provisional data subject to revision
USDA
NRCS
0 75 150 300 Miles
The current month to date precipitation percent of normal represents the accumulated precipitation found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).
Prepared by the USDA/NRCS National Water and Climate Center
Portland, Oregon http://www.wcc.nrcs.usda.gov/gis/
Based on data from http://www.wcc.nrcs.usda.gov/reports/
Science contact: Jim.Marron@por.usda.gov 503 414 3047

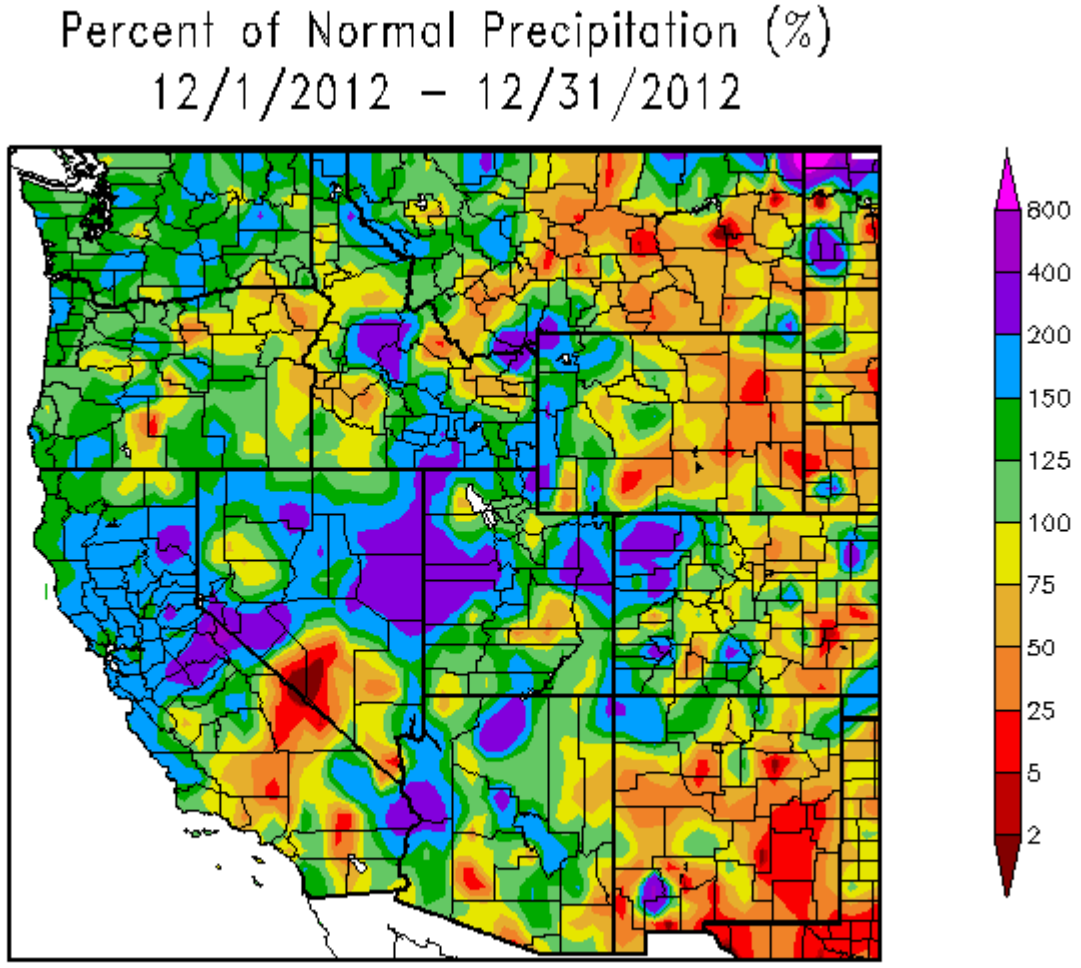
Now…compare to last month's precipitation values in Idaho (below)!! Polar difference.



http://www.wcc.nrcs.usda.gov/gis/images/west_mtdprecpctnormal_update.png

Note: In a stark contrast, this past month's precipitation pattern, in the image below, reflects at least a weak El Niño climate pattern for Idaho (unlike the strong La Niña pattern in the previous two months (Oct and Nov).

Looking at the weather pattern in the next few weeks, according to the AO index forecast, it appears that the weak El Niño pattern should continue, but is forecasted to transition back into a La Niña pattern here very shortly bringing in additional precipitation.

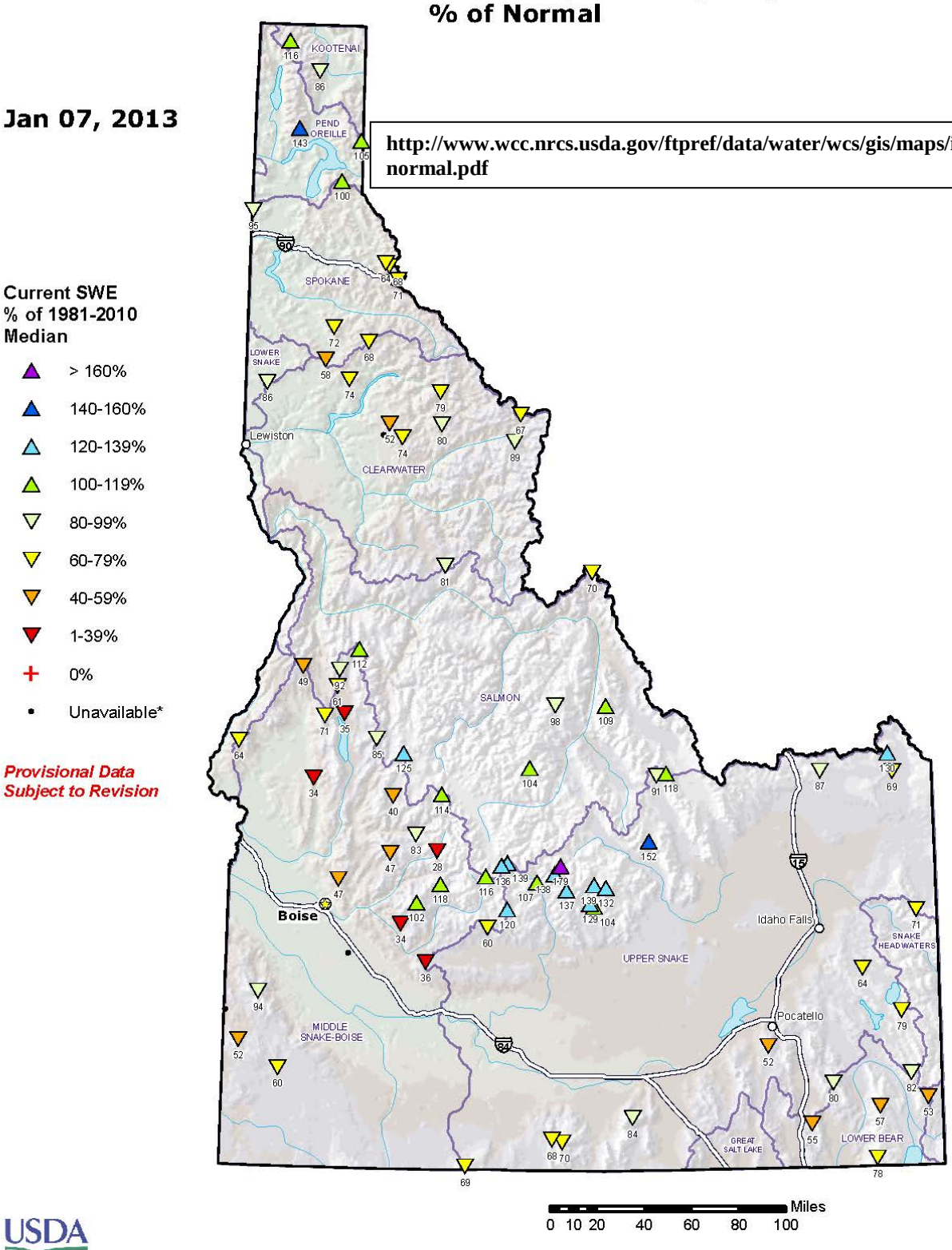


http://www.hprcc.unl.edu/maps/current/index.php?action=update_type&map_type=

Idaho
SNOTEL Snow Water Equivalent (SWE)
% of Normal

Jan 07, 2013

http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/id_swepctnormal.pdf



Current SWE % of 1981-2010 Median

- > 160%
- 140-160%
- 120-139%
- 100-119%
- 80-99%
- 60-79%
- 40-59%
- 1-39%
- 0%
- Unavailable*

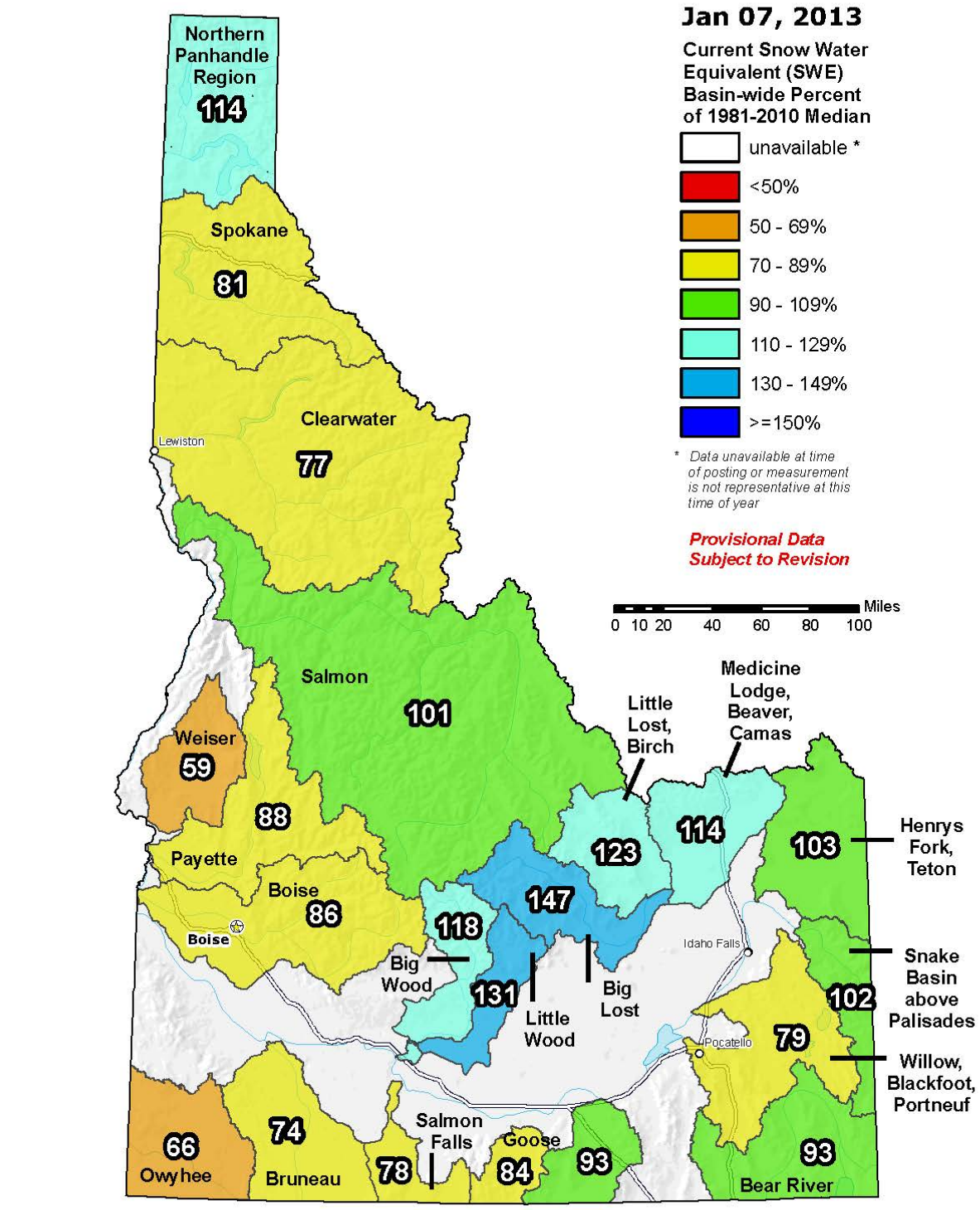
Provisional Data Subject to Revision

USDA NRCS

Prepared by the
USDA/NRCS National Water and Climate Center
Portland, Oregon
http://www.wcc.nrcs.usda.gov/gis/

** Data unavailable at time of posting or unavailable long-term normal.*

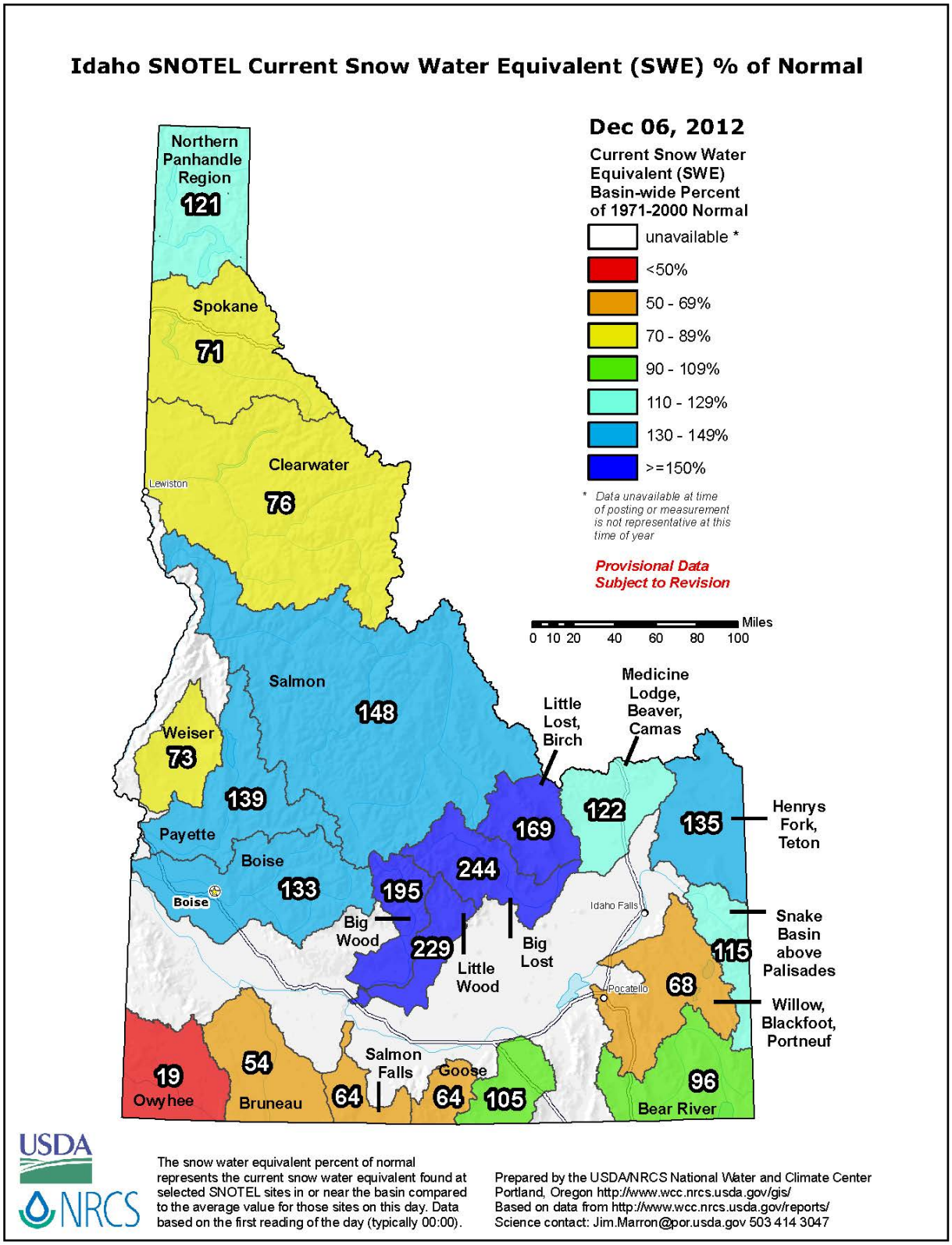
Idaho SNOTEL Current Snow Water Equivalent (SWE) % of Normal



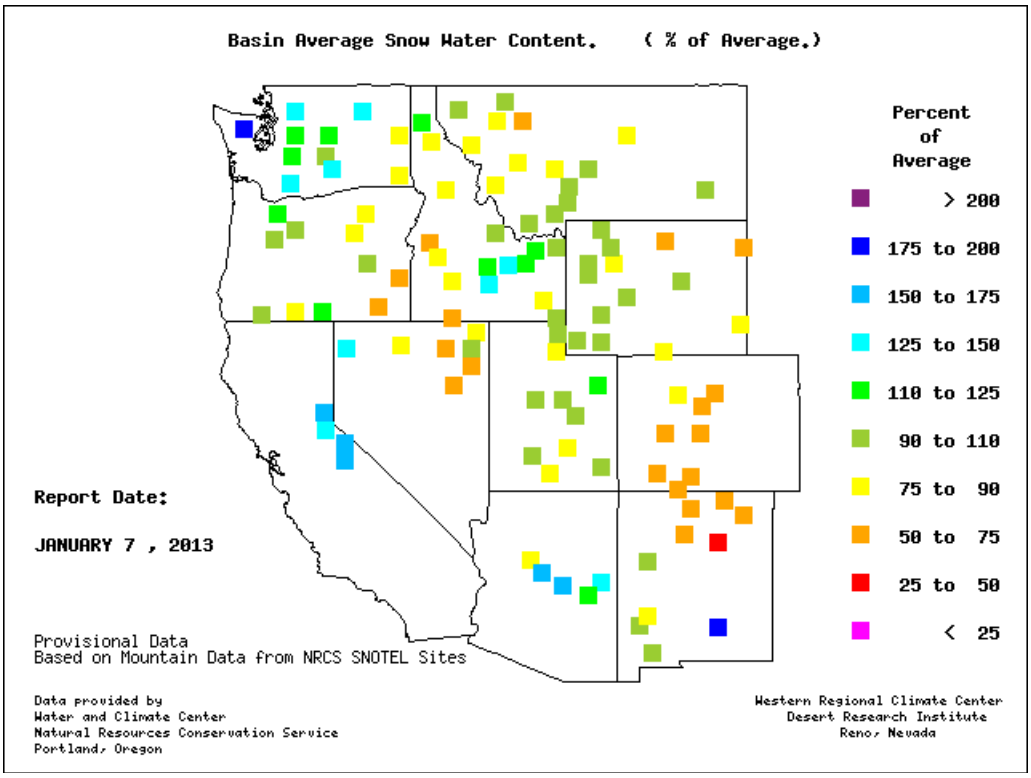
The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

Prepared by the USDA/NRCS National Water and Climate Center
Portland, Oregon http://www.wcc.nrcs.usda.gov/gis/
Based on data from http://www.wcc.nrcs.usda.gov/reports/
Science contact: Jim.Marron@por.usda.gov 503 414 3047

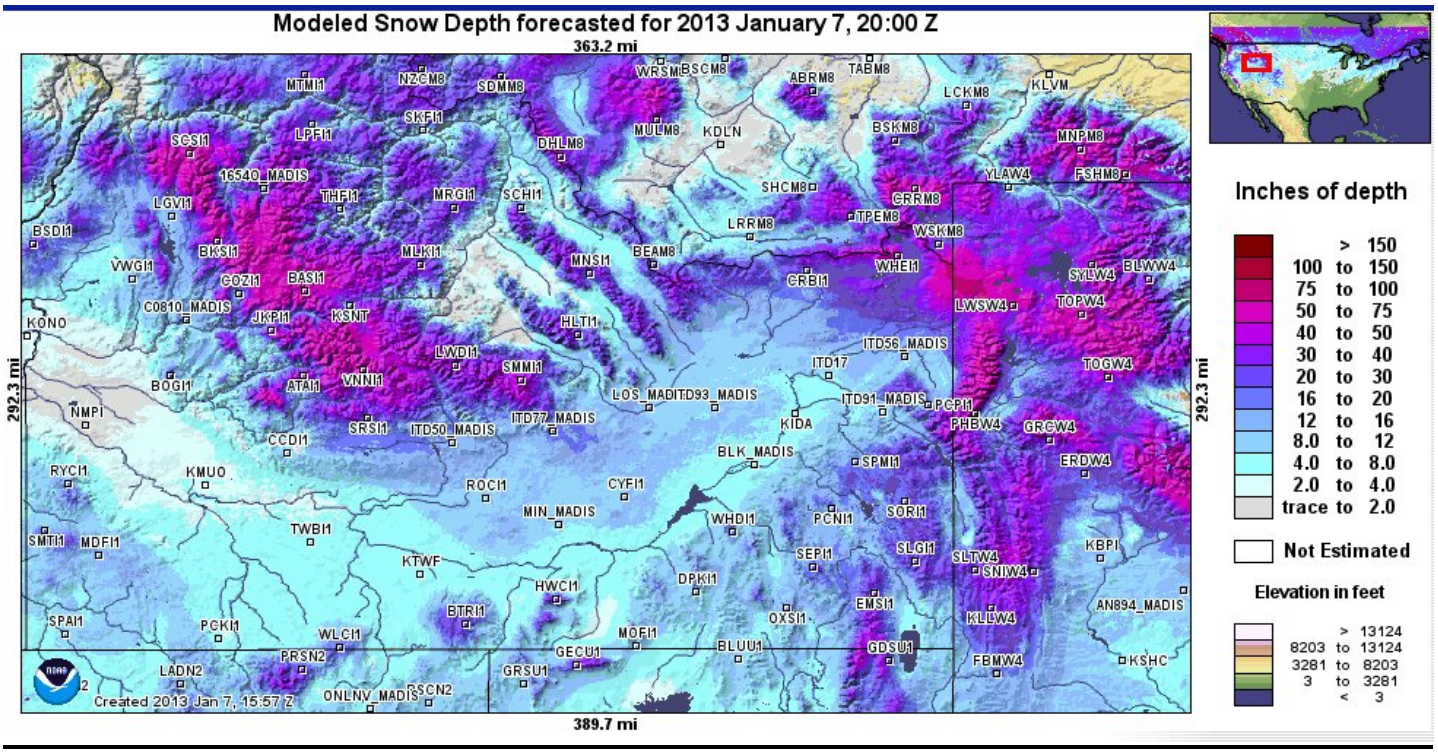
Overall reduction in swe percents of normal over the majority of the HSA basins from last month with the exception of the Salmon Falls/Goose Crk and Willow/Blackfoot/Portneuf basins (see below):



http://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/id_swepctnormal_update.pdf



http://www.wrcc.dri.edu/snotelanom/basinswe.html



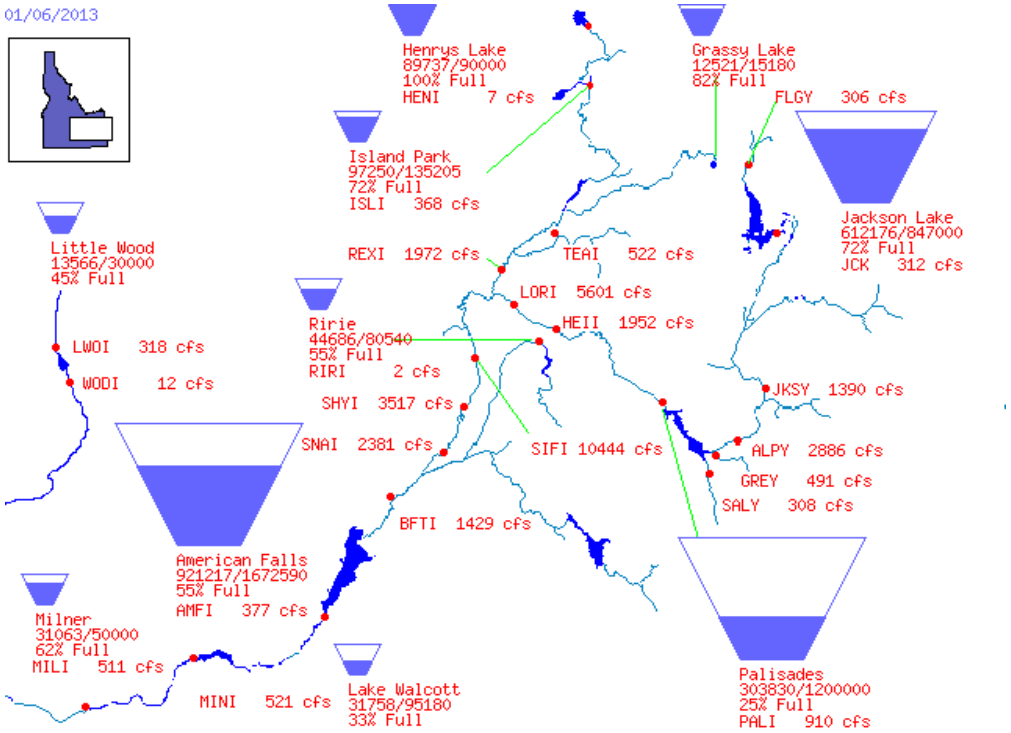
http://www.nohrsc.noaa.gov/interactive/html/map.html

Reservoirs:

Reservoir	% Capacity Nov 30[1]	% Capacity Dec 31[2]	Percent Change	% of Average[2]	% of Last Year[2]
Henry's Lake	95	99	4	108	103
Island Park	65	72	7	101	86
Jackson Lake	70	72	2	127	97
Palisades	3	35	32	48	40
Ririe	51	55	4	128	109
Blackfoot	60	62	2	101	79
American Falls	36	49	13	84	88
Bear Lake	61	62	1	96	81
Magic	13	10	-3	23	16
Little Wood	30	43	13	92	55
Mackay	55	64	9	119	86
Oakley	22	24	2	72	58
Lake Walcott	27[3]	33[4]	6	n/a	n/a
Milner	66[3]	62[4]	-4	n/a	n/a

Source: (1) NRCS November 30, 2012; (2) NRCS December 31, 2012.
(3) US Bureau of Reclamation (BOR) December 5, 2012 (4) BOR January 6, 2013

http://www.wcc.nrcs.usda.gov/ftpref/data/water/basin_reports/idaho/wy2013/bareid12.txt

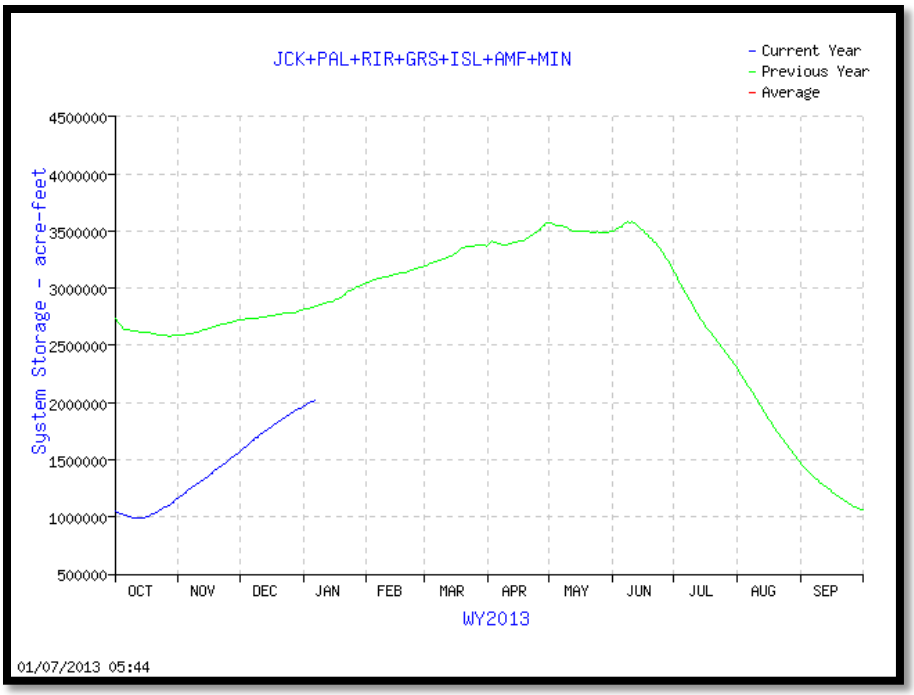


50% of Capacity in Upper Snake River System
(Jackson Lake, Palisades, Grassy Lake, Island Park, Ririe, American Falls & Lake Walcott)

Upper Snake River:
Total Space Available: 2,022,253 AF
Total Storage Capacity: 4,045,695 AF

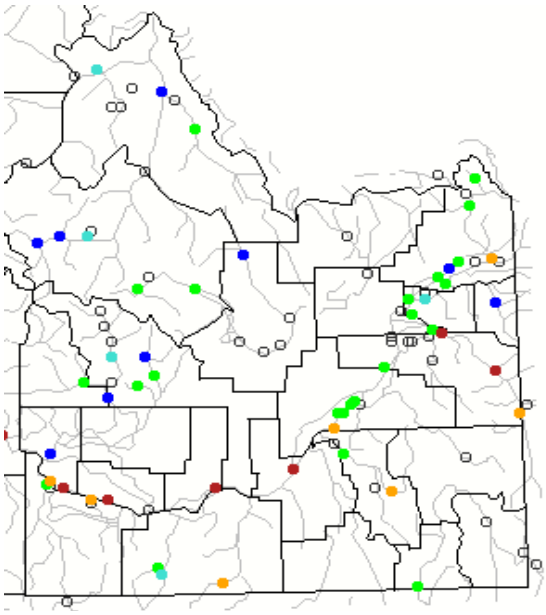
http://www.usbr.gov/pn/hydromet/burtea.cfm

Graph of Upper Snake River Current Total System Reservoir Storage



http://www.usbr.gov/pn-bin/graphwy2.pl?snasys_af

Streamflow:



Monthly average streamflow compared to historical average streamflow for December 2012.

USGS

Explanation - Percentile classes							
Low	<10 Much below normal	10-24 Below normal	25-75 Normal	76-90 Above normal	>90 Much above normal	High	Not-ranked

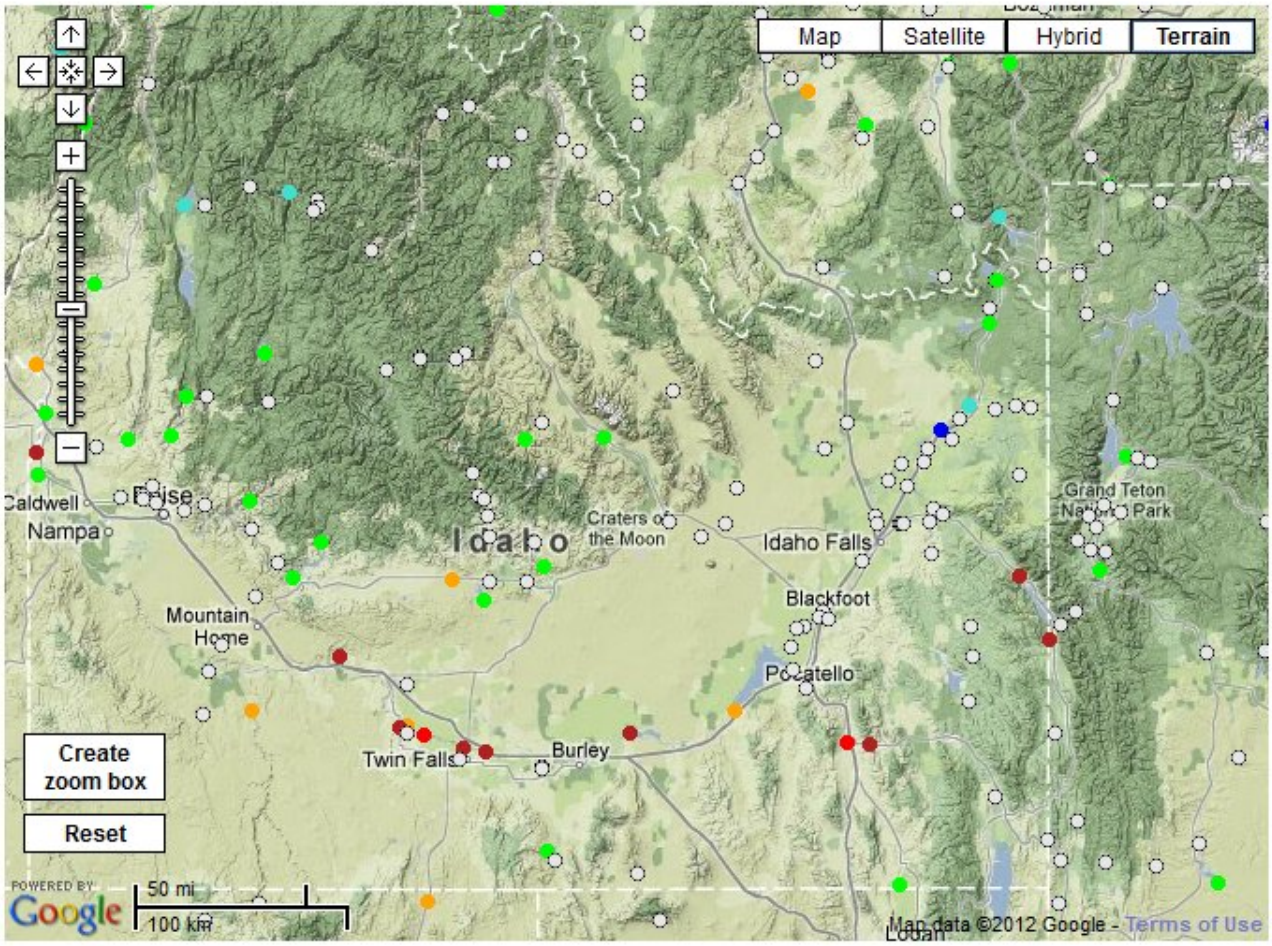
http://waterwatch.usgs.gov/?m=mv01d&r=id&w=map

Monthly Below Normal Streamflow for Jan 7, 2013:

Map | HUC Map | Google Map

Map of real-time streamflow compared to historical streamflow for the day of the year (Idaho)

Idaho or Water-Resources Regions



Explanation - Percentile classes							
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

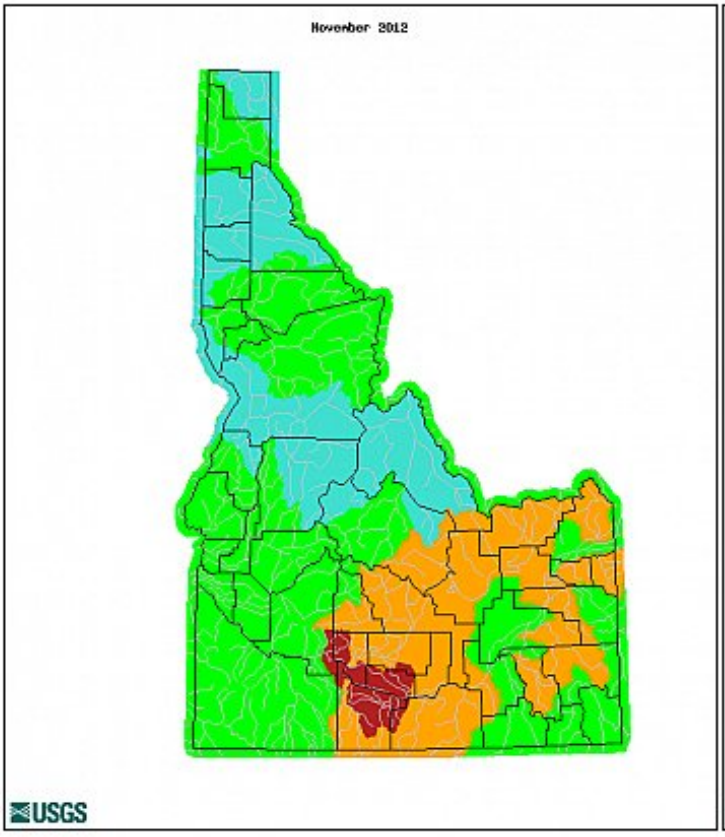
http://waterwatch.usgs.gov/index.php?id=mv01d_dry&sid=w__gmap|m__mvd_dry&r=id

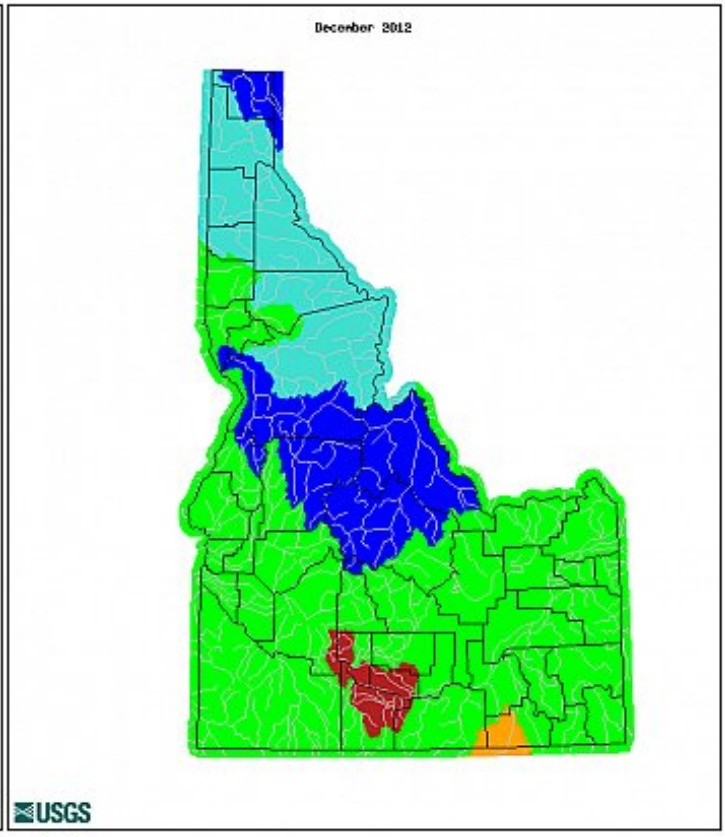
Historic Streamflow Comparisons (Nov '12 to Dec '12 and Dec '11 to Dec '12):

Comparison of Monthly Streamflow Maps

Geographic Area: Idaho | Water Resource Region: | Map Type: HUC | GO

Date (YYYYMM): 201211 Date (YYYYMM): 201212





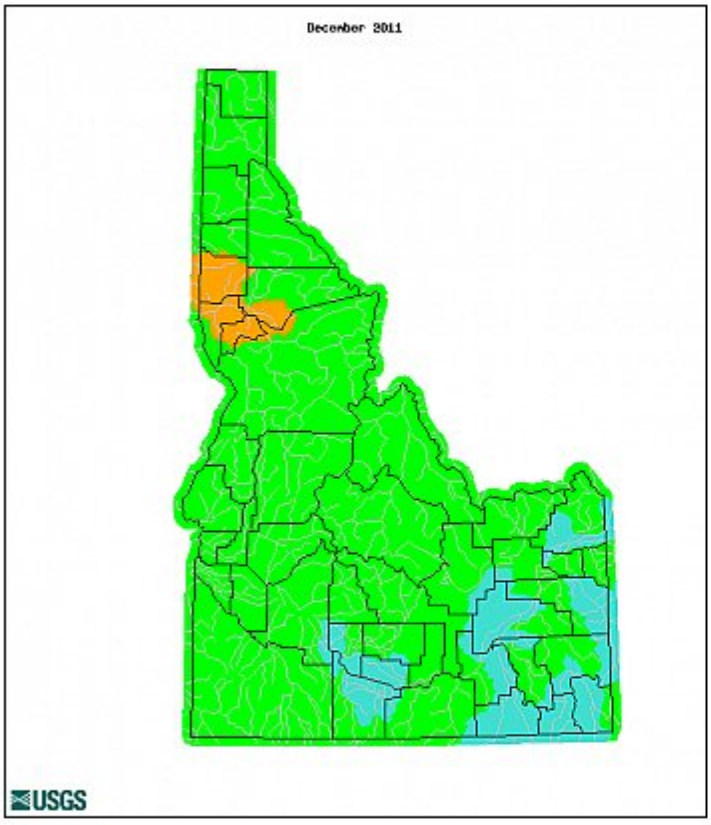
Explanation - Percentile classes						
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

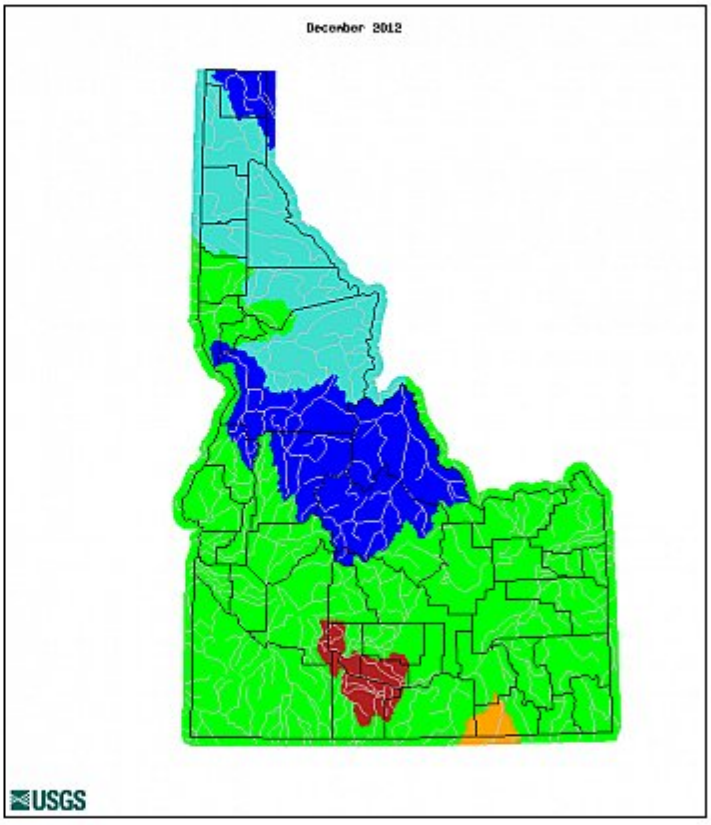
Comparison of Monthly Streamflow Maps

Geographic Area: Idaho | Water Resource Region: | Map Type: HUC | GO

Date (YYYYMM): 201112

Date (YYYYMM): 201212

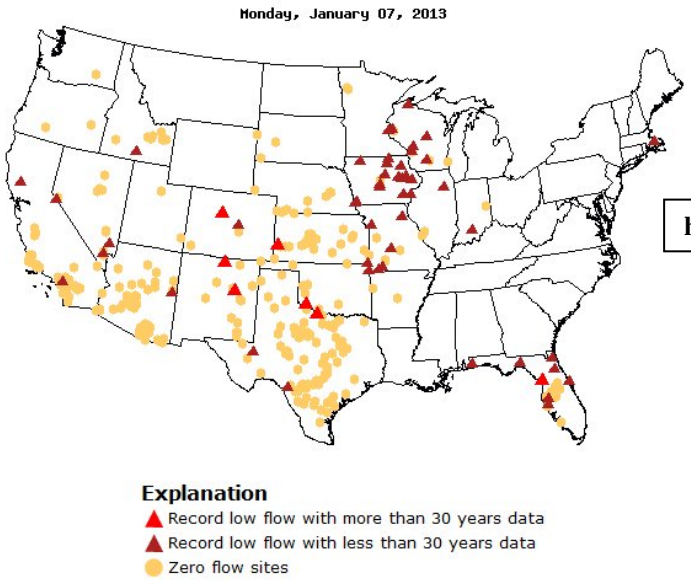




Explanation - Percentile classes						
Low	<10	10-24	25-75	76-90	>90	High
	Much below normal	Below normal	Normal	Above normal	Much above normal	

http://waterwatch.usgs.gov/index.php

Map of Record Low 7-day Streamflow



http://waterwatch.usgs.gov/index.php?id=wwdrought_us

Drought Information:

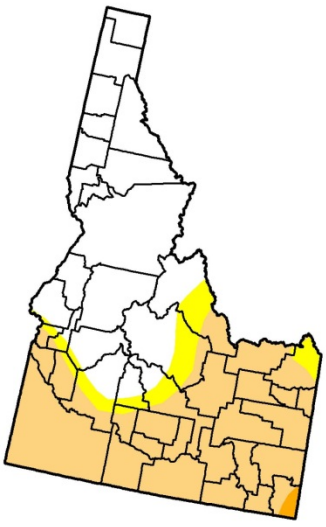
U.S. Drought Monitor

January 1, 2013
Valid 7 a.m. EST

Idaho

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	45.29	54.71	47.63	0.52	0.00	0.00
Last Week (12/25/2012 map)	45.29	54.71	47.63	0.52	0.00	0.00
3 Months Ago (10/02/2012 map)	15.61	84.39	66.47	0.95	0.00	0.00
Start of Calendar Year (01/01/2013 map)	45.29	54.71	47.63	0.52	0.00	0.00
Start of Water Year (09/25/2012 map)	15.61	84.39	66.47	1.27	0.00	0.00
One Year Ago (12/27/2011 map)	48.90	51.10	0.00	0.00	0.00	0.00



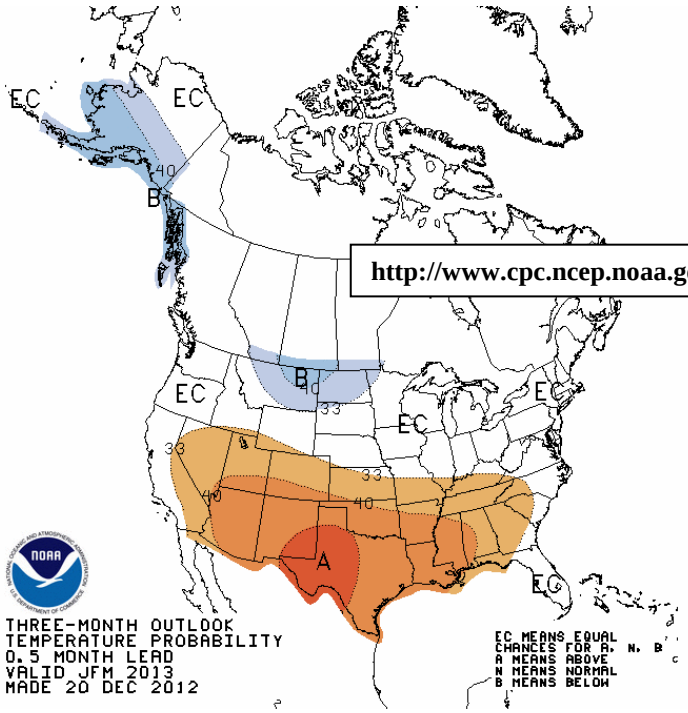
Intensity:

- *D0 Abnormally Dry*
- *D1 Drought - Moderate*
- *D2 Drought - Severe*
- *D3 Drought - Extreme*
- *D4 Drought - Exceptional*

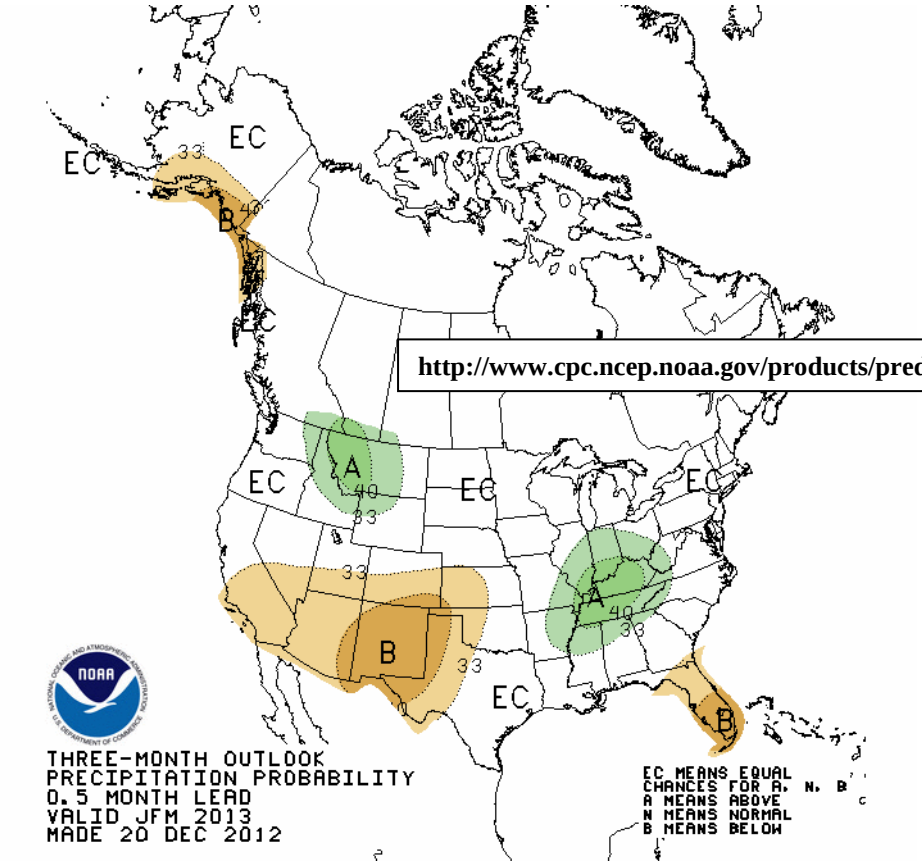
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

http://droughtmonitor.unl.edu

Released Thursday, January 3, 2013
Richard Heim, National Climatic Data Center, NOAA



http://www.cpc.ncep.noaa.gov/products/predictions/long_range/lead01/off01_temp.gif



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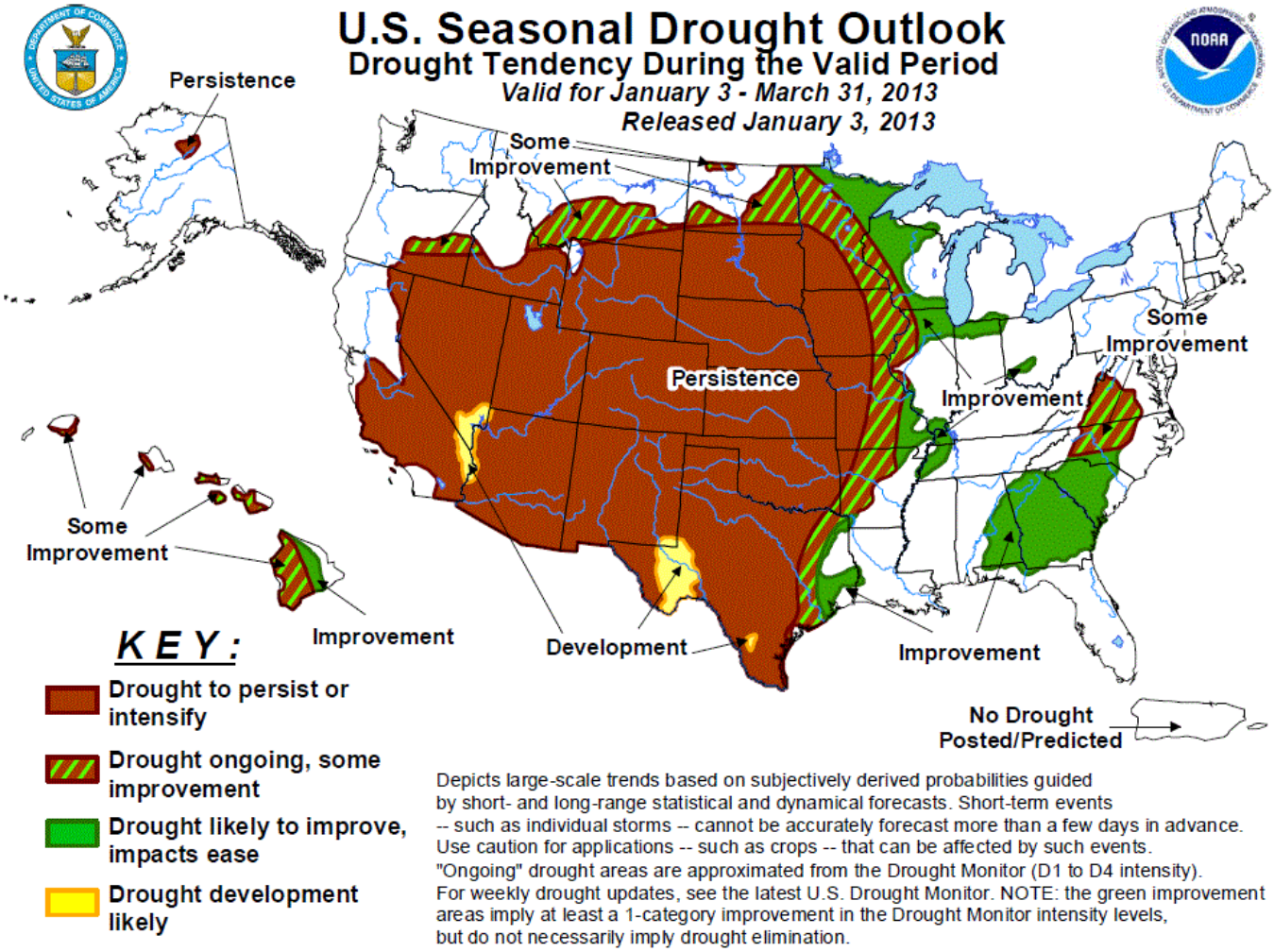

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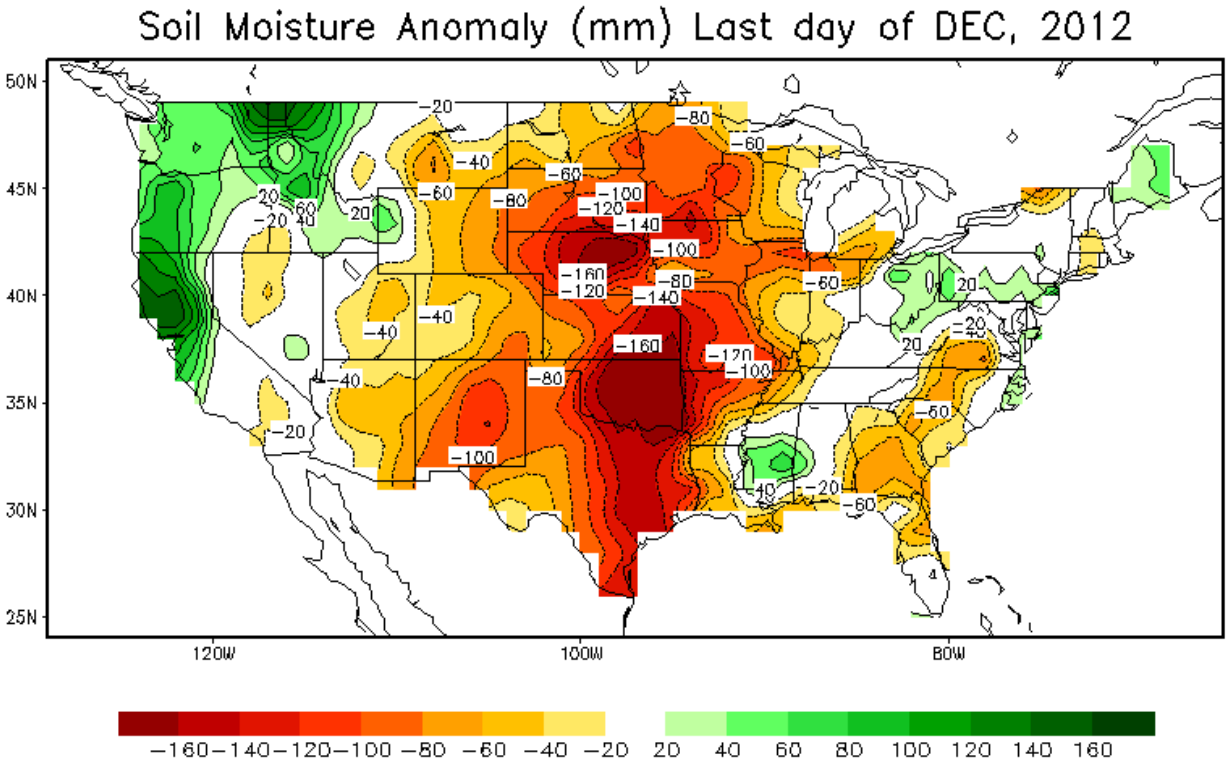

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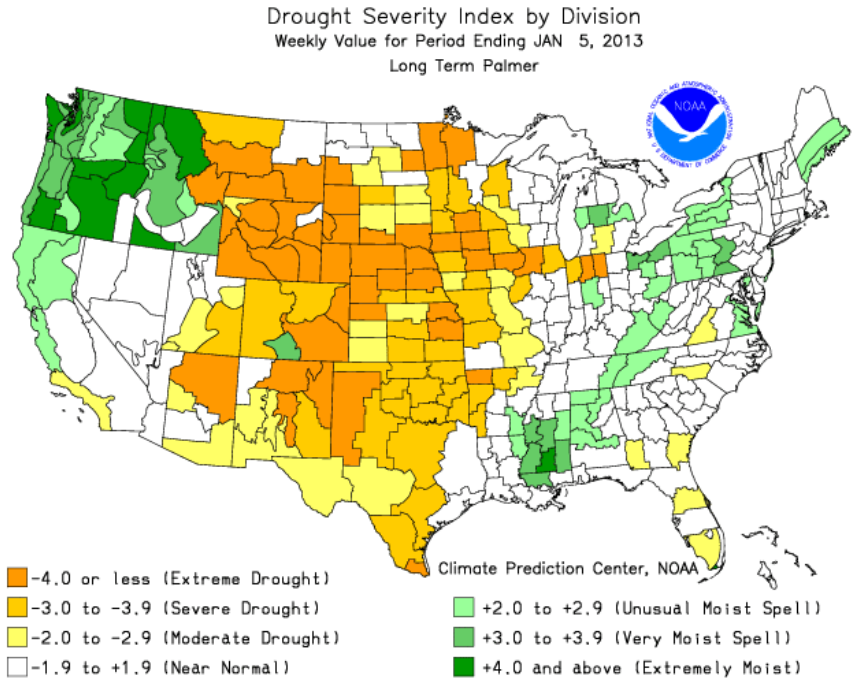

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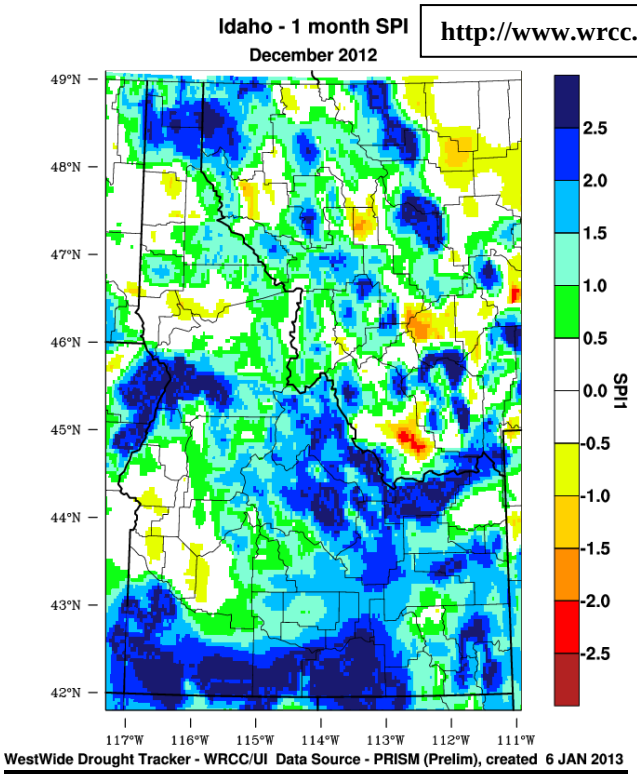

NWRFC Water Supply Forecast Report for WFO PIH (Ensemble Date: 1/7/13):

		Volume Forecast, KAF						Runoff, KAF			
Location	Period	90% Exceedence	%	50% Exceedence	%	10% Exceedence	%	1981-2010 Average	Previous Year	Current Year	Percent Average
SNAKE - NEAR HEISE	APR-JUL	2107	65	2959	91	3817	118	3237	2910		
	APR-SEP	2479	65	3456	91	4408	116	3785	3431		
	JAN-JUL	2571	68	3417	90	4286	113	3790	3594	34	1
FALLS - NEAR CHESTER	APR-JUL	219	66	298	90	422	128	331	331		
	APR-SEP	239	64	334	89	466	124	375	384		
	JAN-JUL	300	72	376	90	502	121	416	558	7	2
HENRYS FORK - AT ST. ANTHONY	APR-JUL	332	49	522	78	752	112	672	637		
	APR-SEP	379	45	590	71	859	103	836	807		
	JAN-JUL	555	58	744	77	968	100	964	988	20	2
TETON - NEAR ST. ANTHONY	APR-JUL	230	62	339	91	468	125	373	323		
	APR-SEP	307	67	434	95	567	124	457	399		
HENRYS FORK - AT REXBURG	APR-JUL	968	69	1280	91	1617	115	1403	643		
	APR-SEP	1098	61	1473	83	1900	106	1785	735		
	JAN-JUL	1192	65	1504	82	1853	102	1824	1083	28	2
SNAKE - NEAR SHELLEY	APR-JUL	2746	66	4704	113	6286	151	4165	3580		
	APR-SEP	2895	57	5099	101	6958	138	5051	4233		
	JAN-JUL	3583	73	5436	111	7175	146	4917	4697	61	1
PORTNEUF - AT TOPAZ	APR-JUL	33	51	45	71	60	93	64	56		
	APR-SEP	43	53	58	72	76	94	81	67		
	JAN-JUL	51	55	65	70	83	89	93	85	2	2
BIG LOST - MACKAY RESERVOIR NEAR MACKAY	APR-JUL	101	81	157	127	247	199	124	108		
	APR-SEP	123	81	192	127	298	197	151	133		
	JAN-JUL	127	82	182	117	270	174	155	141	2	1
BIG WOOD - AT HAILEY	APR-JUL	148	63	224	95	323	137	235	252		
	APR-SEP	170	65	259	99	368	140	263	274		
	JAN-JUL	174	65	262	98	362	136	266	287	2	1
BIG WOOD - MAGIC DAM	APR-JUL	112	45	222	89	390	156	250	223		
	APR-SEP	119	45	242	92	423	160	264	239		

http://www.nwrfc.noaa.gov/water_supply/ws_report.cgi?Type=WFO&Source=Pocatello&Wyr=2013&WyrDate=2013-01-07

CBRFC Water Supply Forecast Report for Bear River basin (January 1 Forecast):

Area: CBRFC Upper Colorado Green San Jaun Great Basin Sevier Virgin Lower Colorado
Sub-Area: Bear Weber Six Creeks Utah Lake Great Salt Lake
Plots: Auto Off On

Water Supply Point %Avg/Median
▲ < 70 △ 70-90 ▲ 90-110 △ 110-130 ▲ >130 ▲ Regulated

All forecasts and averages are in thousand acre-feet (kaf)
MP=Most Probable

	NWS ID	Location	Percent Avg/Med	Official Forecast Date	Official Min 90%	Official MP 50%	Official Max 10%	Official Percent Average	Official Percent Median	Average	Median
1	BEAW4	Bear - Woodruff Narrows Rsvr Abv	△	2013-01-01	46	**100**	155	**83%**	**91%**	*121*	*110*
2	BERU1	Bear - Utah-wyoming State Line Nr	△	2013-01-01	48	**90**	126	**80%**	**85%**	*112*	*106*
3	BORW4	Smiths Fork - Border Nr	▲	2013-01-01	50	**80**	110	**90%**	**100%**	*89*	*80*
4	HRMU1	Blacksmith Fork - Hyrum Nr Upnl Dam Abv	△	2013-01-01	20	**36**	64	**84%**	**124%**	*43*	*29*
5	LGNU1	Logan - Logan Nr State Dam Abv	▲	2013-01-01	63	**100**	150	**90%**	**103%**	*111*	*97*
6	PRZU1	Little Bear - Paradise	△	2013-01-01	20	**35**	60	**74%**	**69%**	*47*	*51*
7	STDI1	Bear - Montpelier Nr Stewart Dam Blo	△	2013-01-01	94	**150**	256	**82%**	**128%**	*182*	*117*

http://www.cbrfc.noaa.gov/gmap/list/list.php?search=&point=all&plot=&sort=wsupids&type=wsup&basin=4&subbasin=0&espqpf=0&espdist=empirical

NRCS-NWCC Water Supply Forecast Report for upper Snake River basin (January 1 Forecast):

USDA NRCS National Water & Climate Center
* DATA CURRENT AS OF: 1/02/13 15:34:12

UPPER SNAKE RIVER BASIN

Forecast Point	period	50% (KAF)	% of avg	max (KAF)	30% (KAF)	70% (KAF)	min (KAF)	30-yr avg
Henrys Fork nr Ashton (2)	APR-JUL	540	102	725	610	475	380	530
	APR-SEP	720	101	935	805	640	535	710
Henrys Fork nr Rexburg (2)	APR-JUL	1420	101	1710	1540	1300	1130	1400
	APR-SEP	1810	101	2130	1940	1680	1490	1790
Falls R nr Ashton (2)	APR-JUL	365	100	465	405	330	280	365
	APR-SEP	430	99	545	475	390	330	435
Teton R nr Driggs	APR-JUL	142	92	215	170	116	83.0	154
	APR-SEP	178	92	270	210	147	106	193
Teton R nr St. Anthony	APR-JUL	335	92	495	395	280	205	365
	APR-SEP	400	92	585	470	335	250	435
Snake R at Flagg Ranch	APR-JUL	520	112	660	575	465	380	465
	APR-SEP	570	112	720	630	510	420	510
Snake R nr Moran (1,2)	APR-JUL	815	107	1090	900	730	535	765
	APR-SEP	900	107	1210	995	805	590	845
Pacific Ck At Moran	APR-JUL	188	115	250	215	163	127	164
	APR-SEP	199	115	260	225	174	137	173
Snake R nr Alpine (1,2)	APR-JUL	2250	104	3150	2530	1970	1350	2170
	APR-SEP	2580	103	3600	2900	2260	1560	2500
Greys R Nr Alpine	APR-JUL	295	97	395	335	255	196	305
	APR-SEP	345	96	460	390	300	230	360
Salt R Nr Etna	APR-JUL	290	97	440	350	230	139	300
	APR-SEP	355	96	530	425	285	179	370
Snake R nr Irwin (1,2)	APR-JUL	3050	101	4010	3350	2750	2090	3010
	APR-SEP	3530	101	4610	3870	3190	2450	3500
Snake R nr Heise (2)	APR-JUL	3260	101	4060	3580	2940	2460	3240
	APR-SEP	3790	100	4700	4160	3420	2880	3780
Willow Ck nr Ririe	MAR-JUL	66.0	99	117	87.0	45.0	15.3	67.0
Blackfoot R ab Res nr Henry	APR-JUN	52.0	87	98.0	69.0	37.0	20.0	60.0
Portneuf R at Topaz	MAR-JUL	64.0	84	102	78.0	51.0	35.0	76.0
	MAR-SEP	77.0	83	121	94.0	62.0	43.0	93.0

cc:

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