Idaho Water Supply Outlook

IDWR

State Water Supply Meeting

Jan 12, 2012

Current Conditions & New Normals

Maybe new normals also means new peaks and new lows

USDA United States Department of Agriculture

NRCS Natural Resources Conservation Service

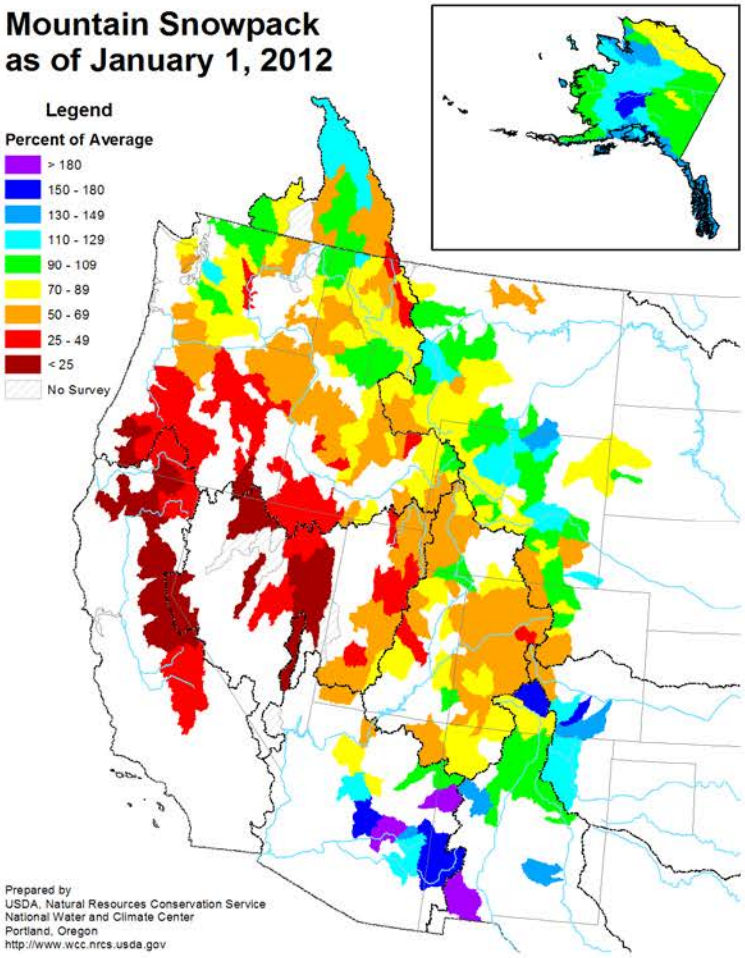
NRCS United States Department of Agriculture Natural Resources Conservation Service

Idaho Water Supply Outlook Report February 1, 2012

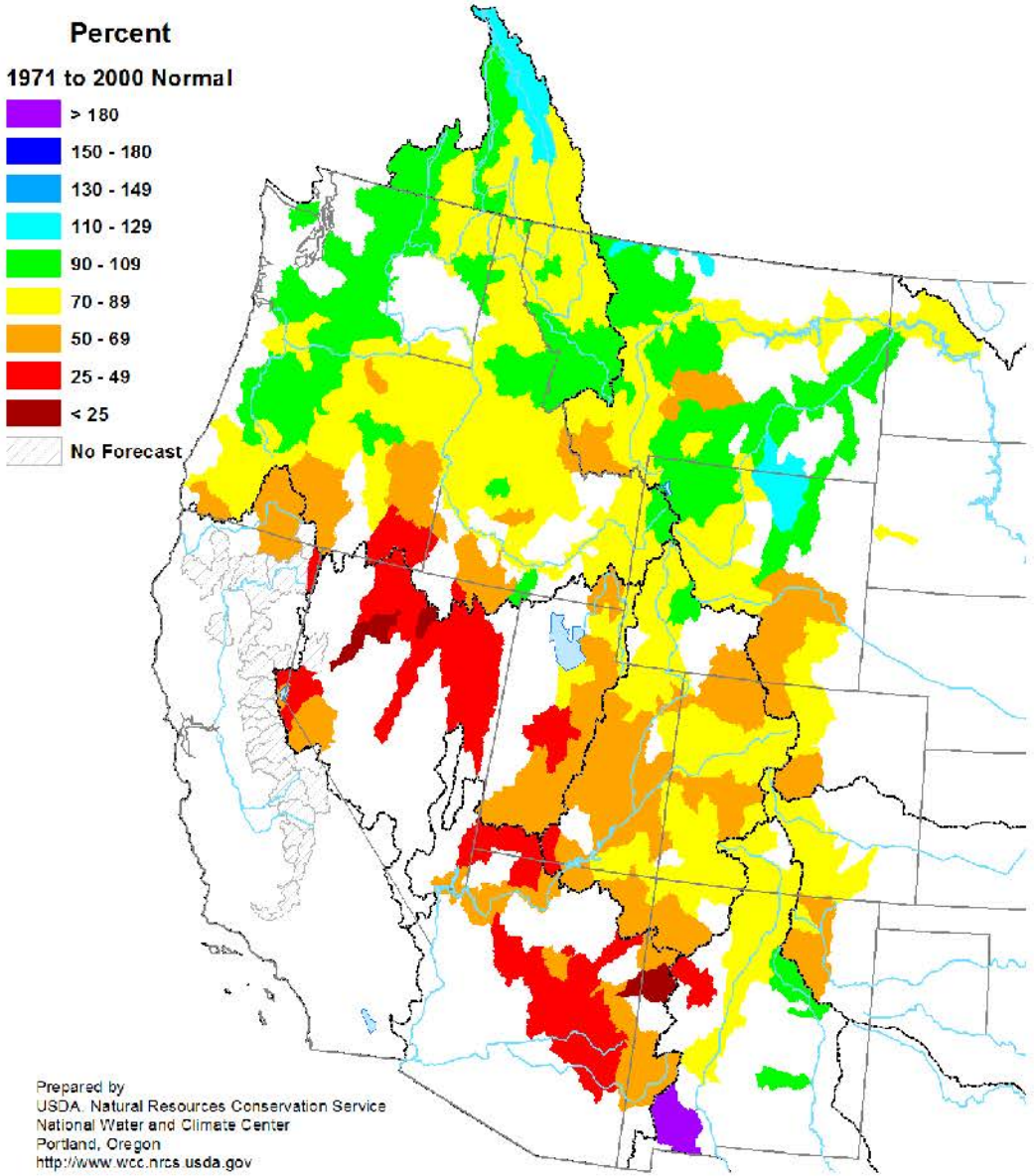
Photo from KTVB Channel 7 - January 31, 2012

This month we offer a new perspective on snow measurement. The above photo was taken from atop a snowtube looking down on Ron Abramovich who is measuring snow at Mores Creek Summit. KTVB fastened a GoPro camera to Ron's snowtubes to capture a bird's eye view for their story. GoPro videos have become popular with action sport athletes wanting to record their latest YouTube exploit. These cameras can be strapped to virtually anything to record a participant's view of the action. While measuring snow isn't as extreme as pulling a back flip off a 40 foot cliff into powder, this January's storms did post extreme snowfall amounts. Mores Creek Summit SNOTEL, in the Boise Basin, broke its two day record when 40 inches of new snow fell, adding 6.1 inches of snow water content between January 18-19, 2012. The previous two day record in terms of snow water content was 4.6 inches in January 2000. In the days following this storm a number of impressive avalanches occurred on nearby slopes in this popular backcountry snowmobiling and skiing area. Fortunately no injuries were reported.

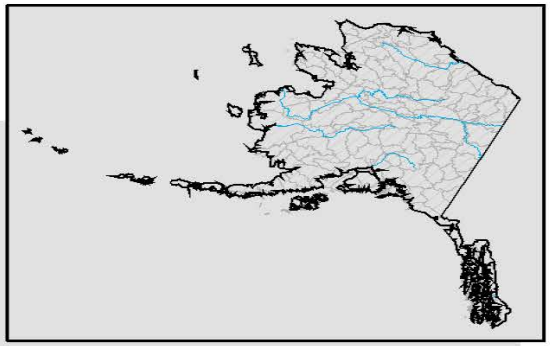
Mountain Snowpack as of January 1, 2012

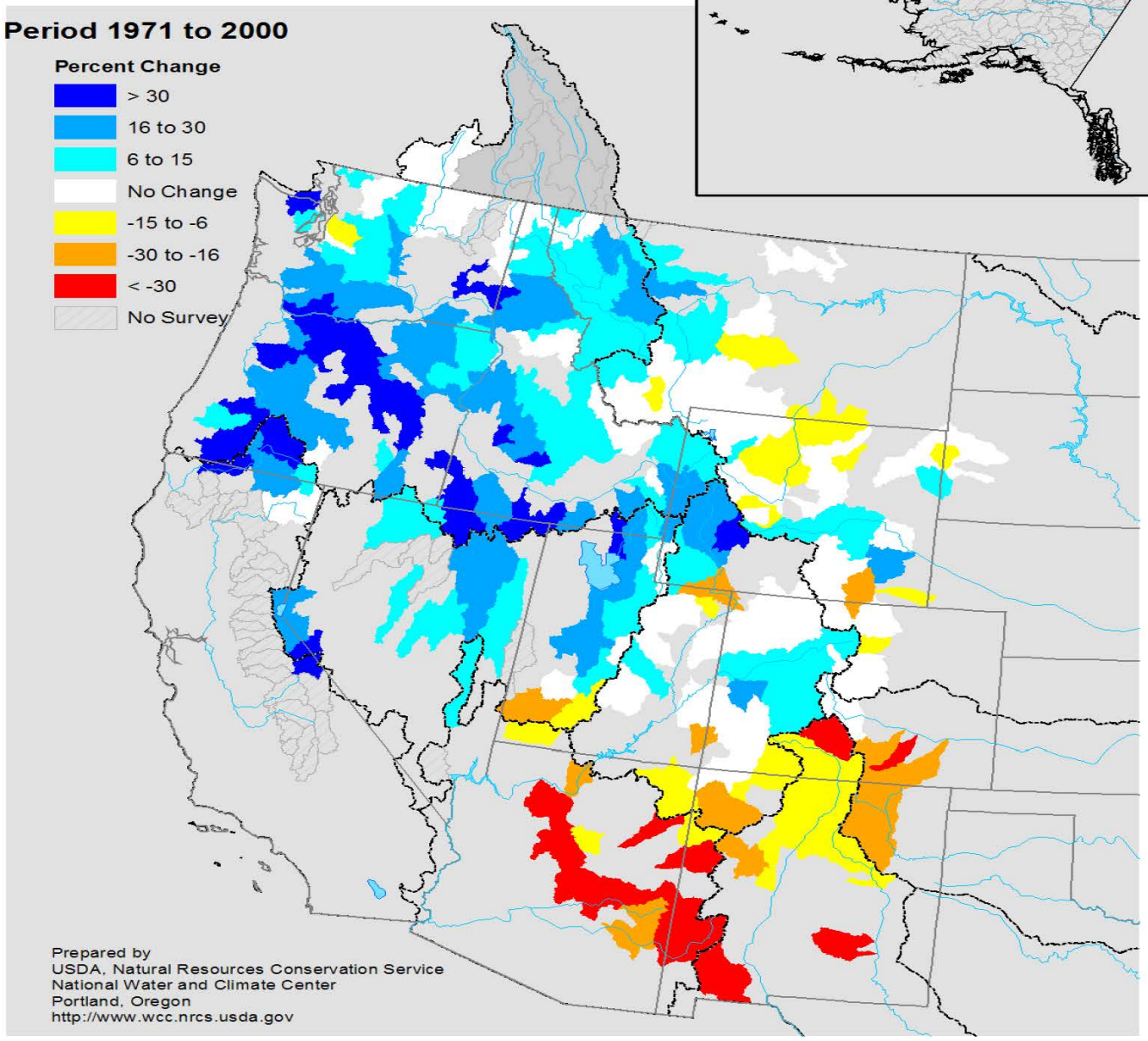


Spring and Summer Streamflow Forecasts as of February 1, 2012

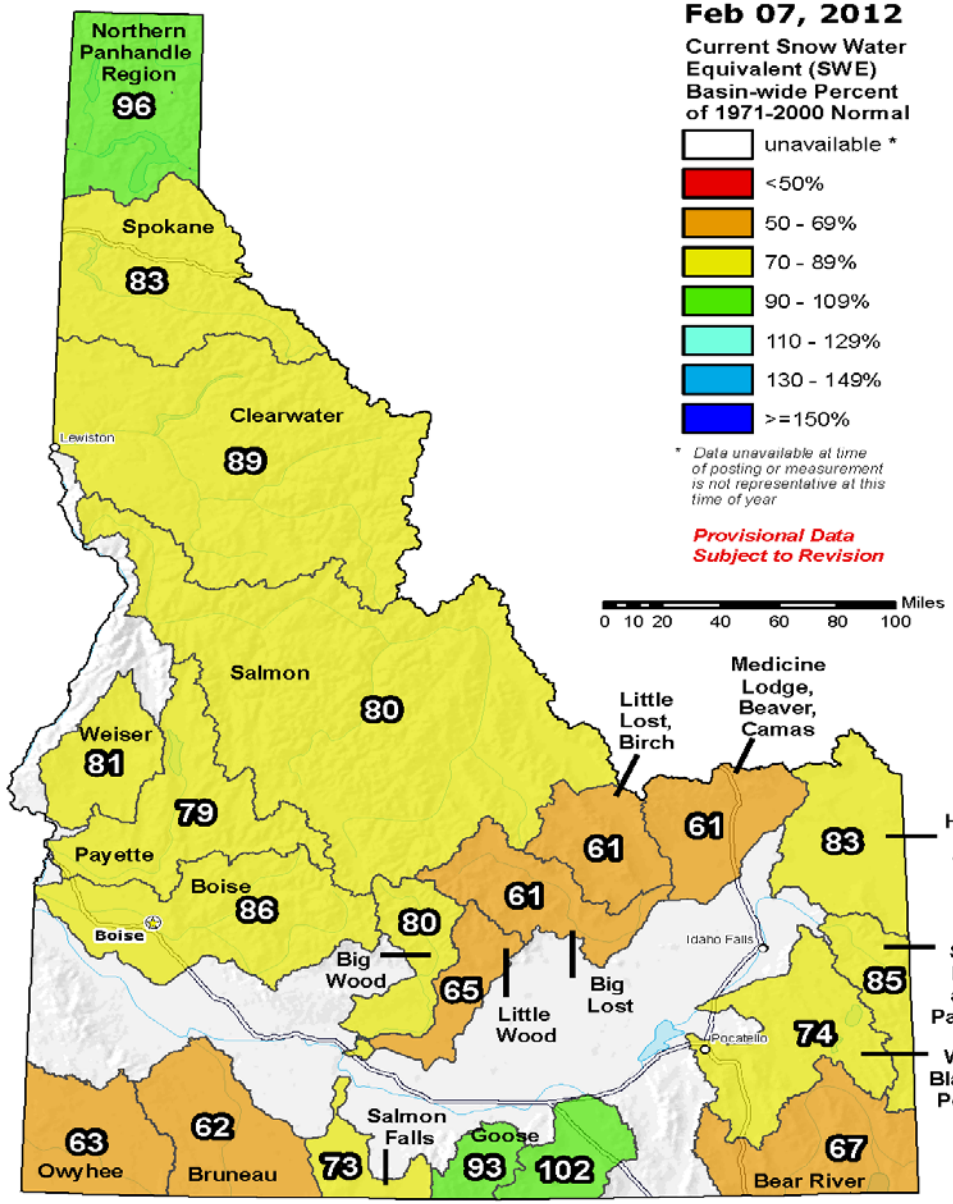


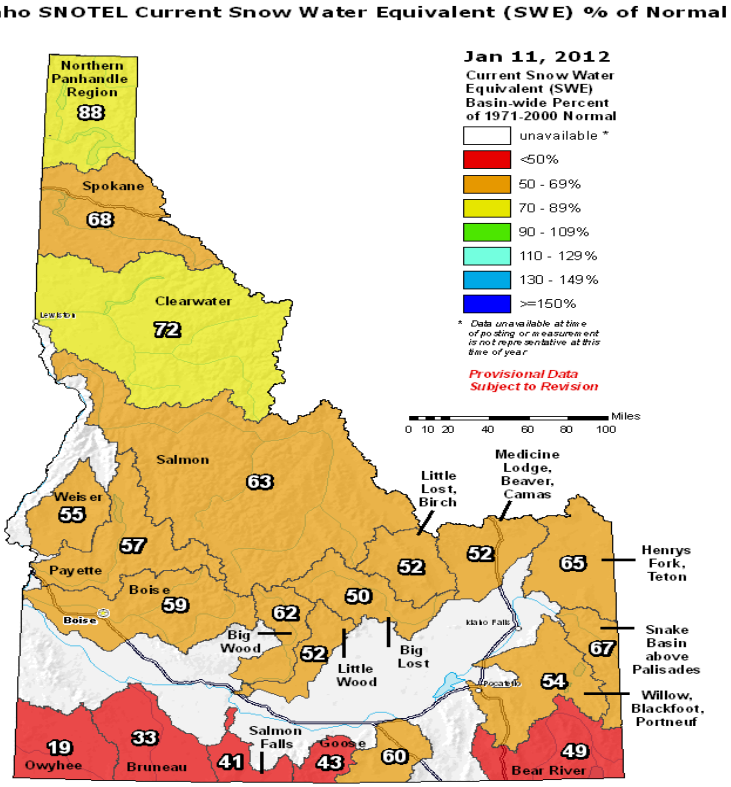
2012 Mountain Snowpack Change between January 1 and February 1





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





Today's Snowpack are ONLY 40 - 65% of Seasonal Peaks that occur in early April

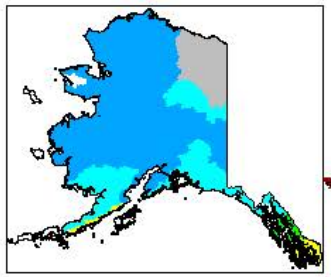
USDA NRCS

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 Cente
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

Monthly Precipitation for December 2011

(Averaged by Hydrologic Unit)



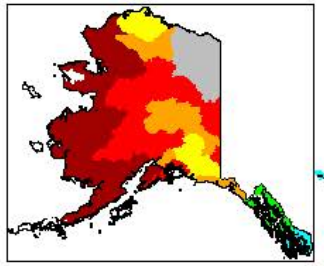
% Average

- > 150%
- 129 - 150%
- 110 - 129%
- 100 - 109%
- 90 - 99%
- 70 - 89%
- 50 - 69%
- < 50%
- Not Reported

Prepared by
NOAA, National Weather Service
Colorado Basin River Forecast Center
Salt Lake City, Utah
www.cbrfc.noaa.gov

Monthly Precipitation for January 2012

(Averaged by Hydrologic Unit)



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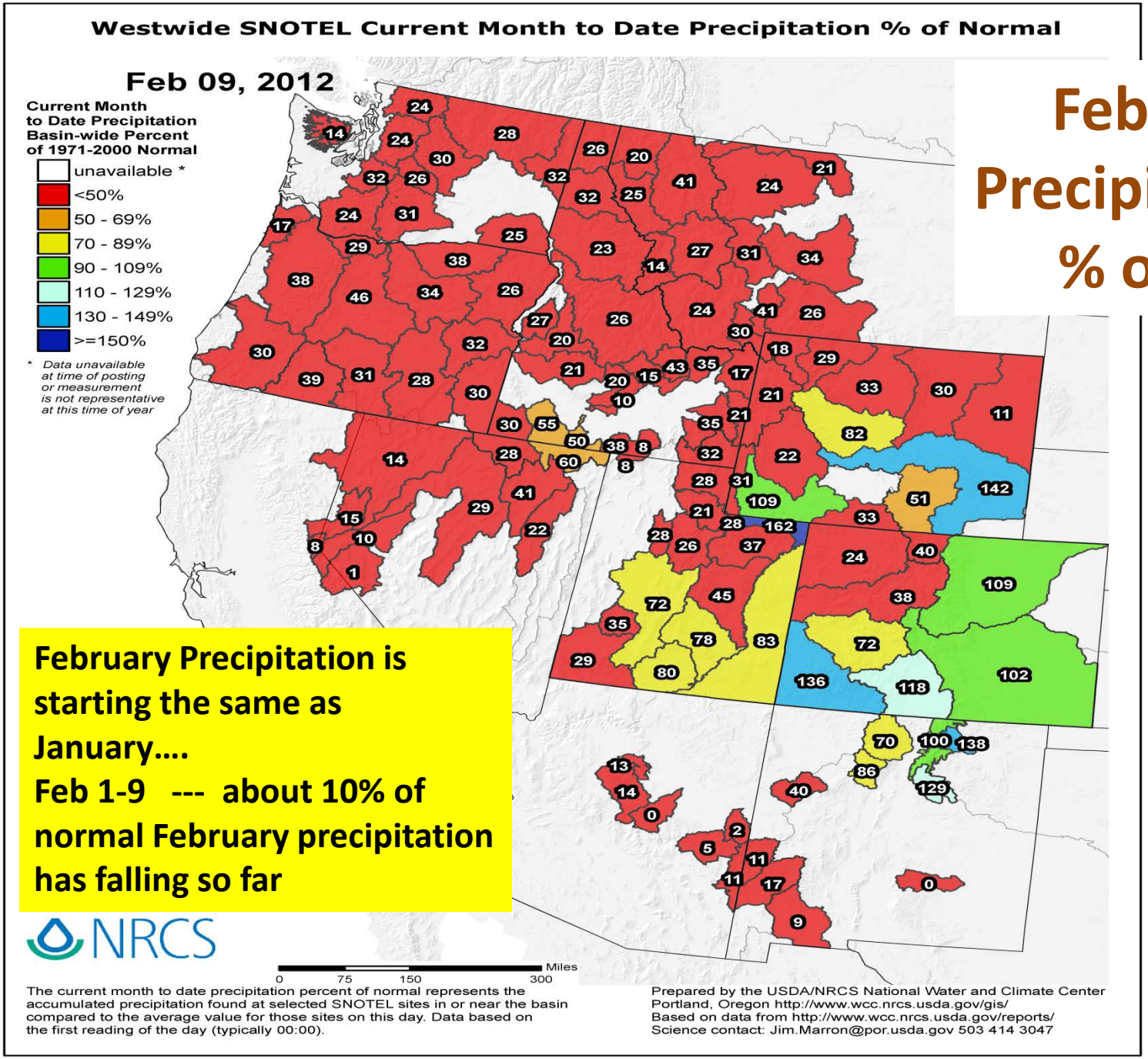
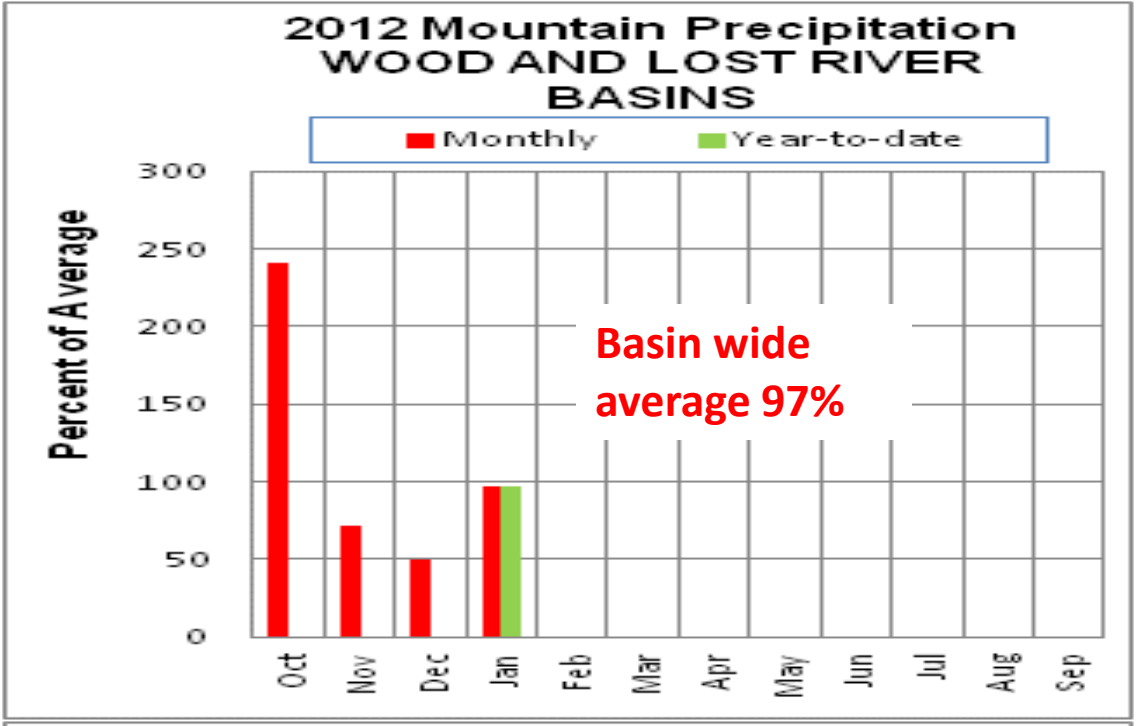
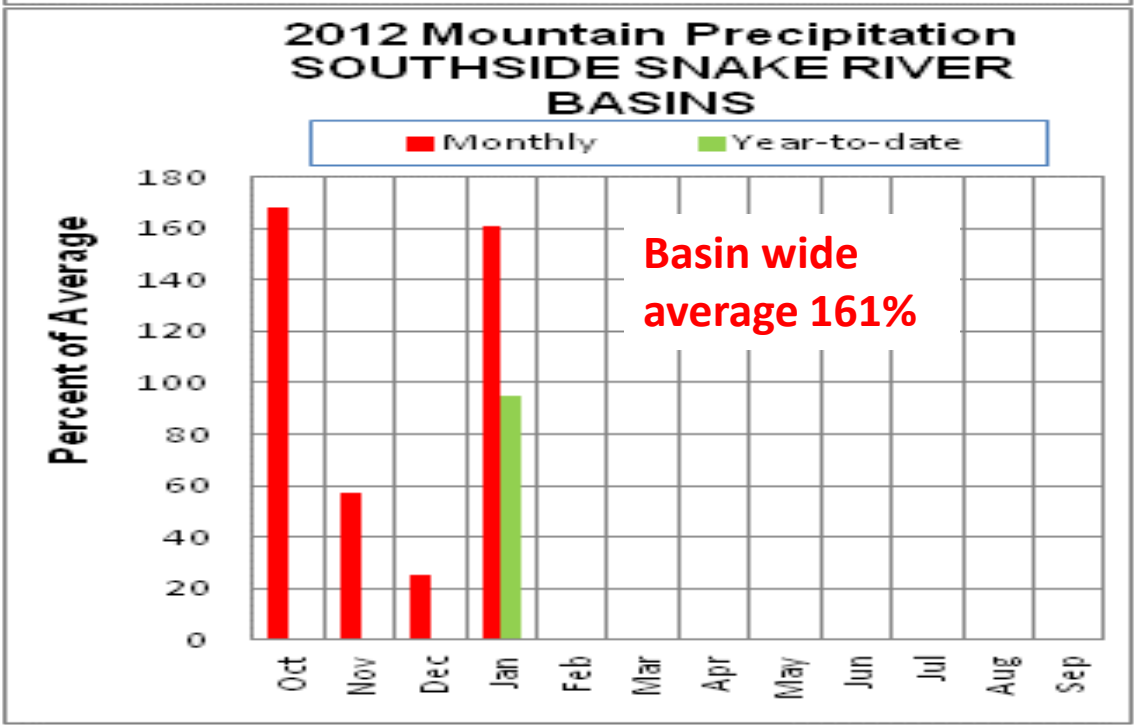


February 1-9 Precipitation as % of Normal





January Precipitation for Individual Basins % of Average

Wood & Lost

Big Wood	110
Camas	143
Little Wood	99
Big Lost	88
Little Lost	74
Birch	60
Medicine Lodge, Beaver, Camas	57

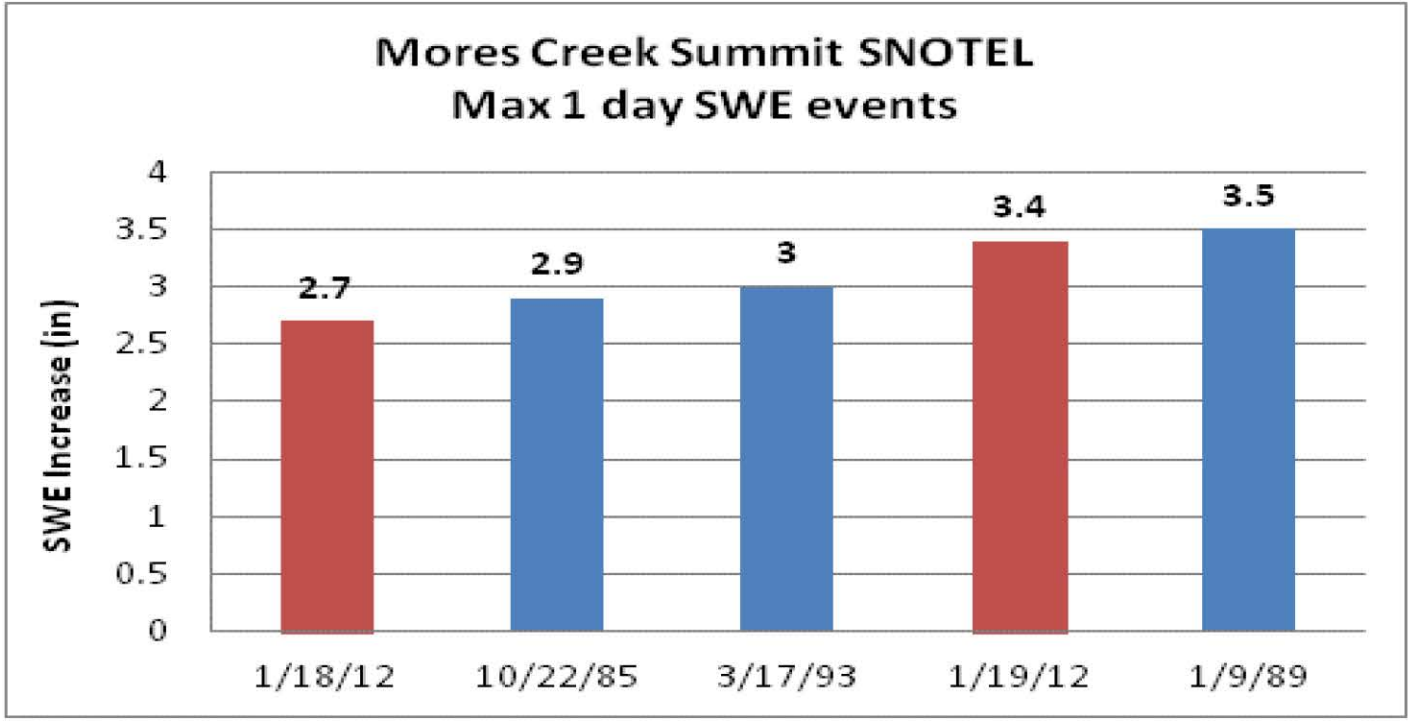
Southside Snake River Basins

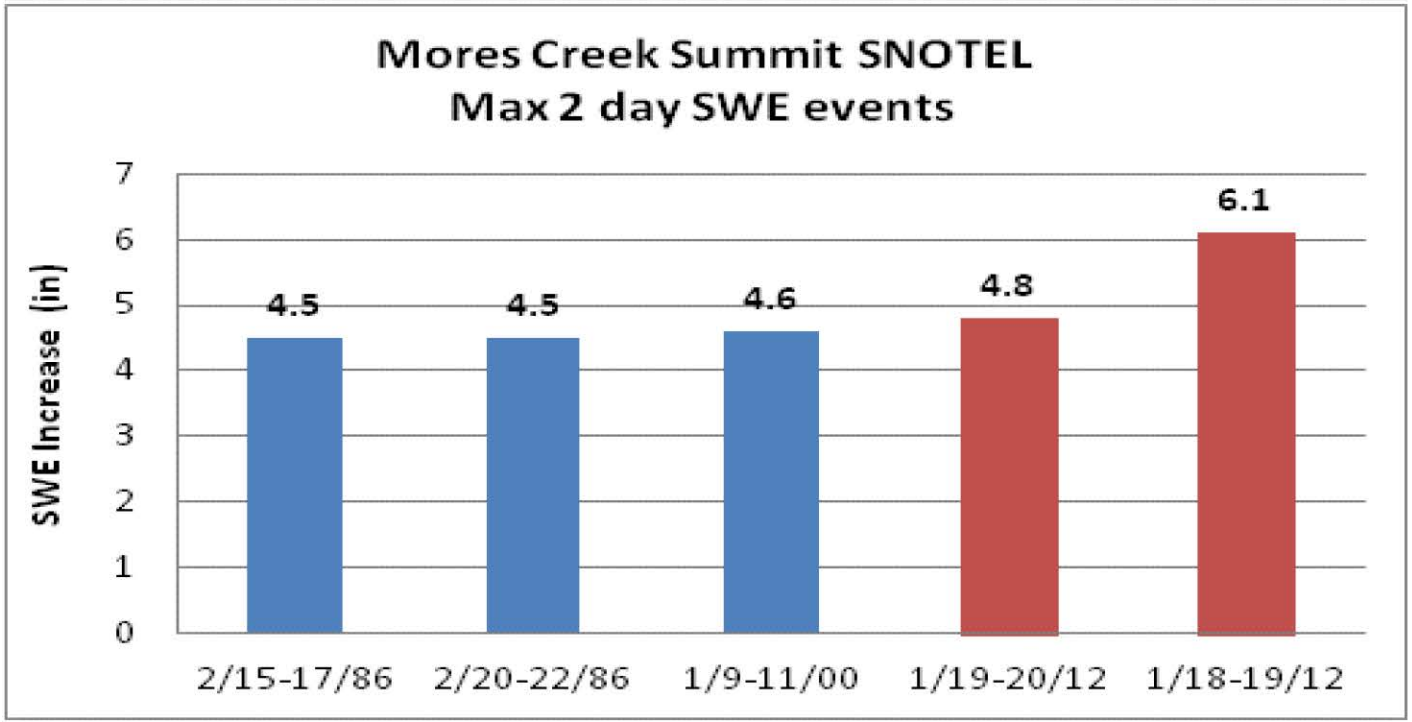
Raft	175
Oakley	204
Salmon Falls	150
Bruneau	133
Owyhee	160

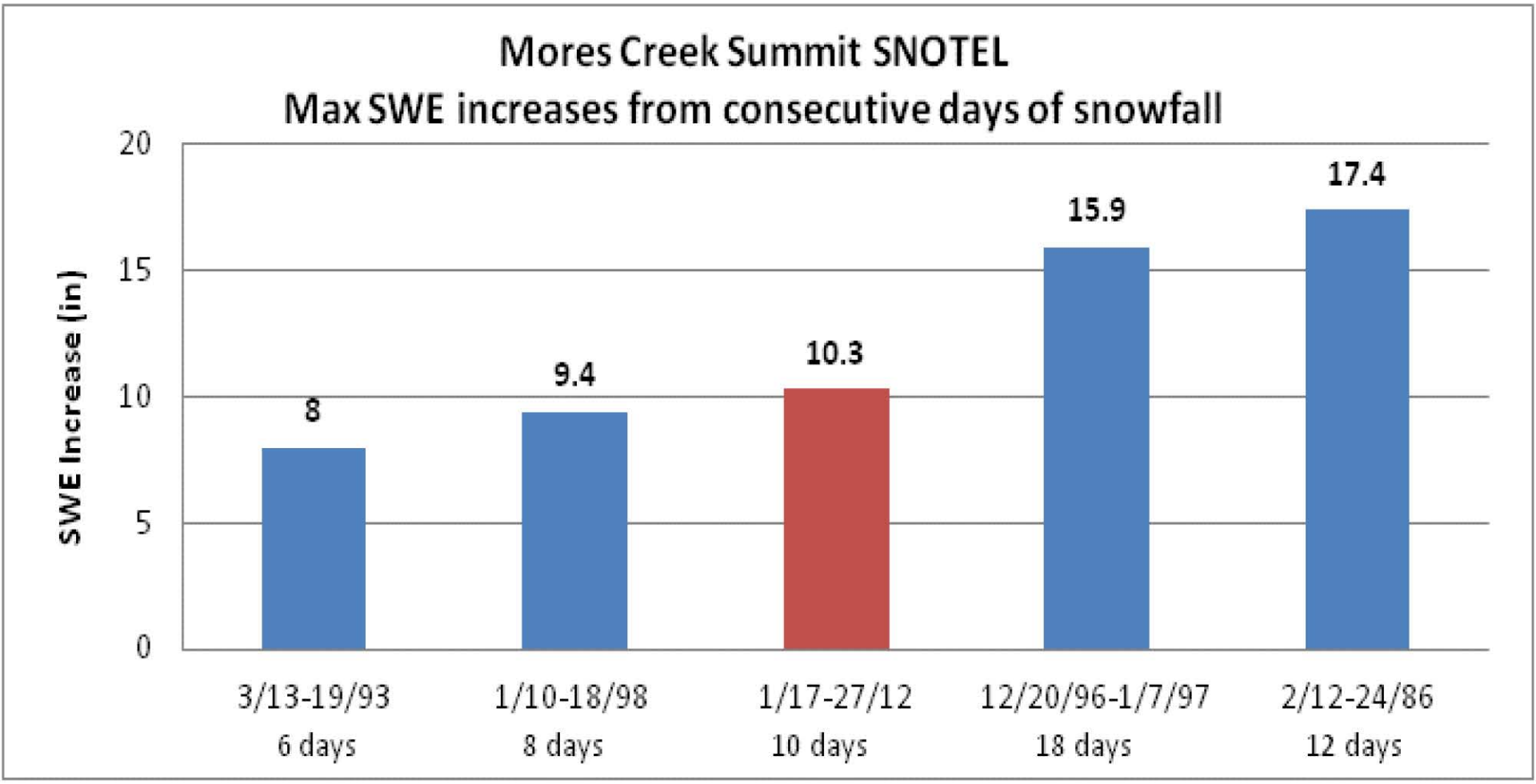
Southern Idaho
Record High January Precipitation Amounts
for Selected Sites
Daily Data Starts in 1982 (inches)

SNOTEL Site	New Record January 2011	Previous Record January 1998	Maximum Monthly Amount	
Bostetter R.S.	7.6	6.6	10.2	Dec 1997
Magic Mountain	9.1	8.2	10.3	Nov 1989
Howell Canyon	9.9	12.8	15.7	Dec 1997

4th highest January amount since 1982

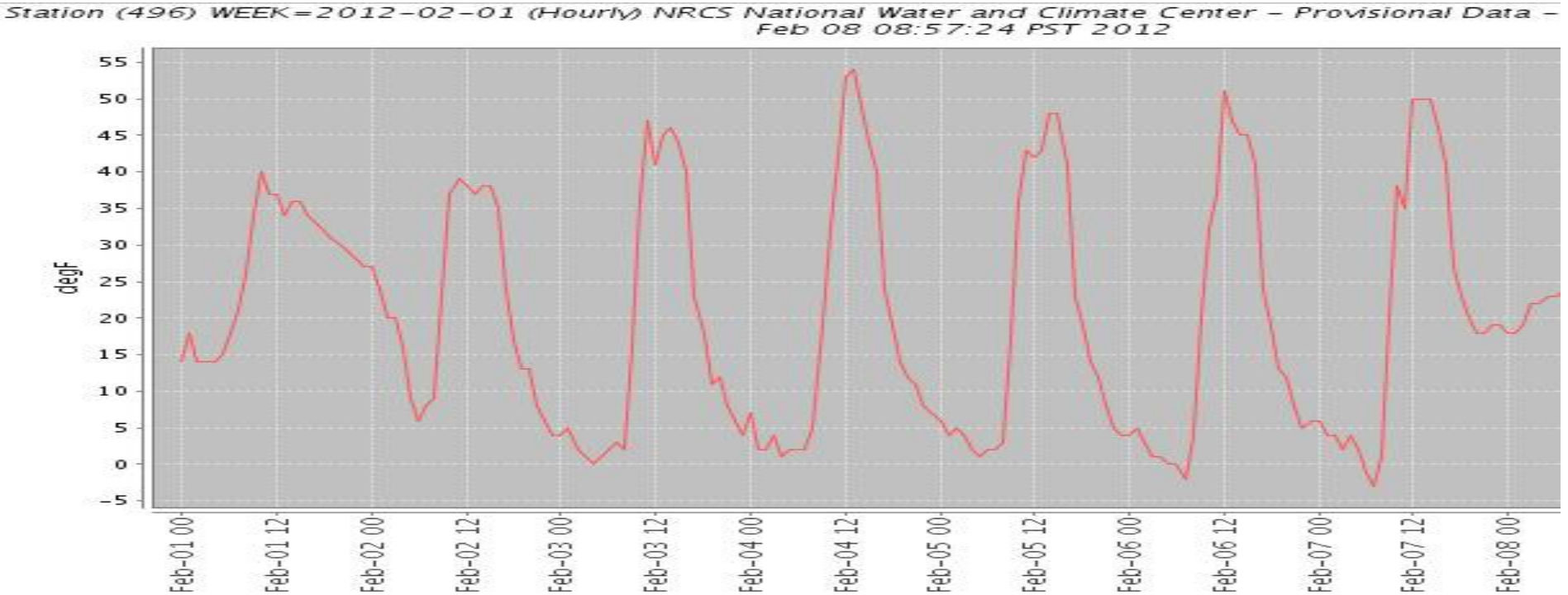

Mores Creek Summit SNOTEL
Max 1 day SWE events
SWE Increase (in)
4
3.5
3
2.5
2
1.5
1
0.5
0
2.7
2.9
3
3.4
3.5
1/18/12
10/22/85
3/17/93
1/19/12
1/9/89


Mores Creek Summit SNOTEL
Max 2 day SWE events
SWE Increase (in)
7
6
5
4
3
2
1
0
4.5
4.5
4.6
4.8
6.1
2/15-17/86
2/20-22/86
1/9-11/00
1/19-20/12
1/18-19/12


Mores Creek Summit SNOTEL
Max SWE increases from consecutive days of snowfall
SWE Increase (in)
20
15
10
5
0
8
9.4
10.3
15.9
17.4
3/13-19/93
6 days
1/10-18/98
8 days
1/17-27/12
10 days
12/20/96-1/7/97
18 days
2/12-24/86
12 days

Hourly Graham Guard Station Temperature Data Showing Temperature Swings

SNOTEL site	report date	Max deg-C	Min deg-C	Max deg-F	Min deg-F	Diff
SNAKE RIVER STATION, WY	2/7/2012	4.9	-27.1	41	-17	58
GRAHAM GUARD STA., ID	2/7/2012	12.7	-18.8	55	-2	57

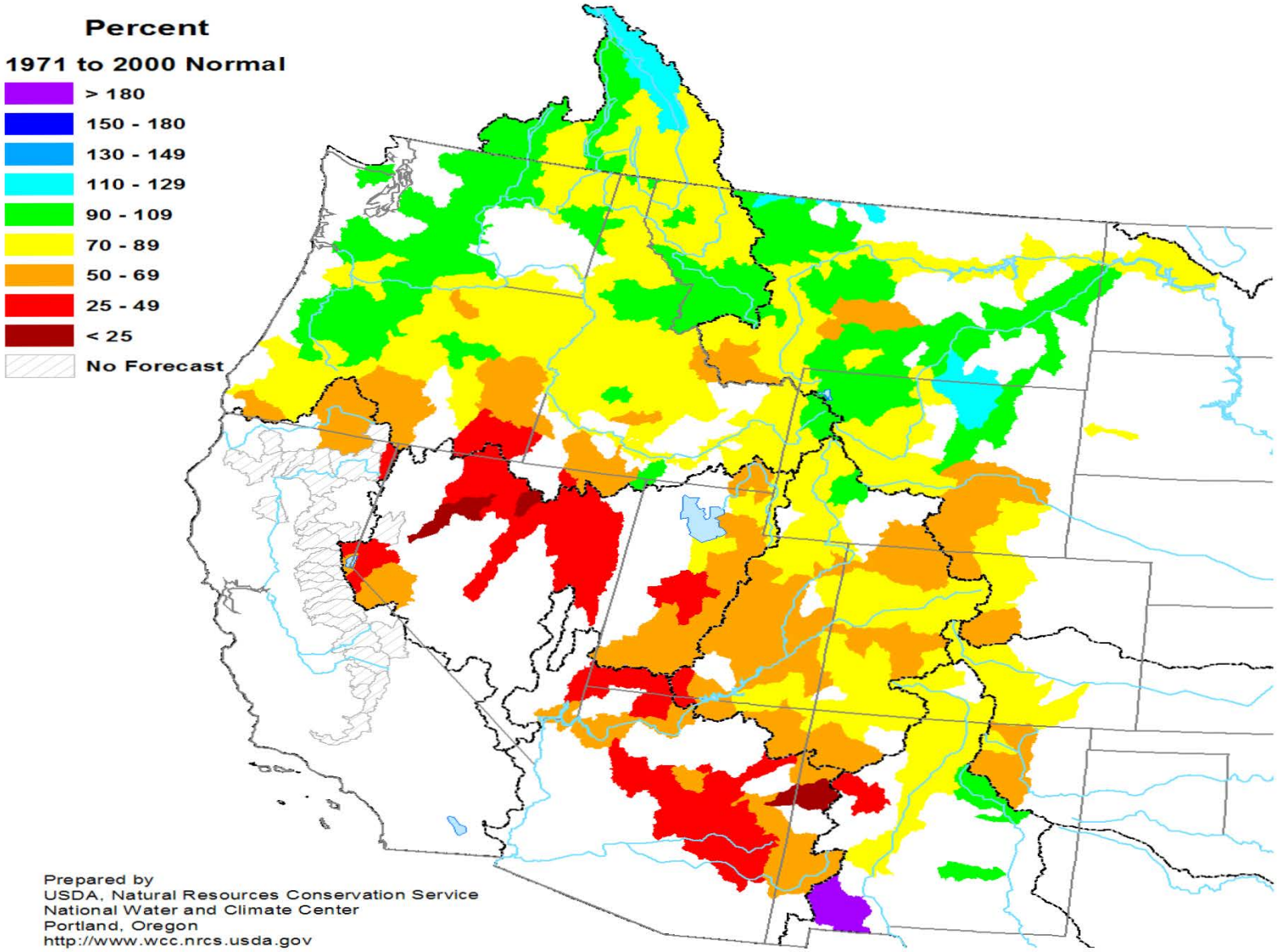


Feb 1 - Feb 8, 2012 **Note cloud cover moved in about 10pm Tuesday night on Feb 7**

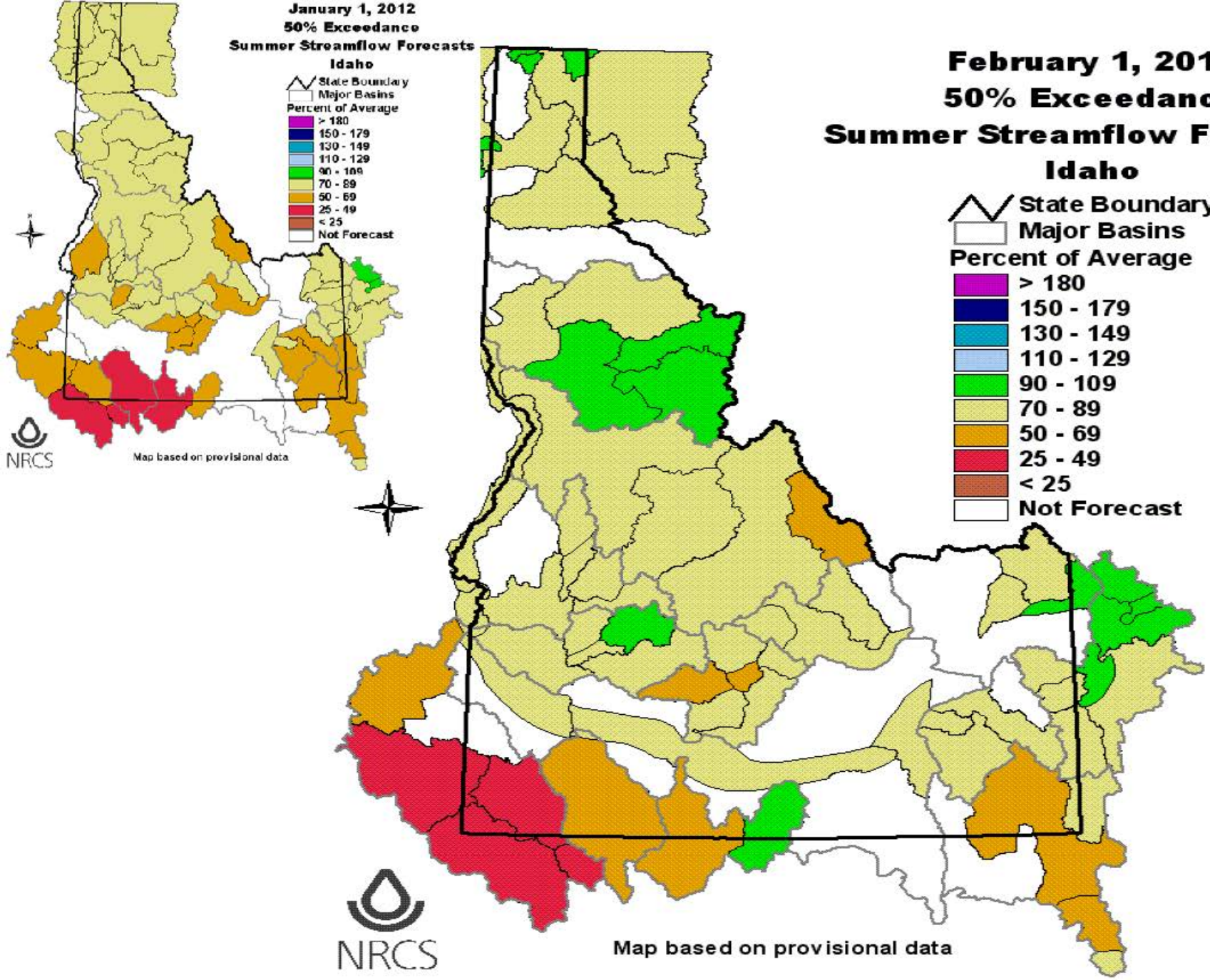
Feb 1 - Feb 8, 2012 **Note cloud cover moved in about 10pm Tuesday night on Feb 7**

Lower elevation sites in Interior West, a diurnal change of >60F occurs once every 25 to 50 years. At SNOTEL sites, this might occur more frequently because of high albedo of sun off snow and clear nights with some drainage of dense cold air.

Spring and Summer Streamflow Forecasts as of February 1, 2012



Prepared by
USDA, Natural Resources Conservation Service
National Water and Climate Center
Portland, Oregon
http://www.wcc.nrcs.usda.gov

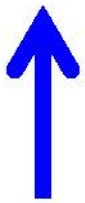

January 1, 2012
50% Exceedance
Summer Streamflow Forecasts
Idaho
State Boundary
Major Basins
Percent of Average
> 180
150 - 179
130 - 149
110 - 129
90 - 109
70 - 89
50 - 69
25 - 49
< 25
Not Forecast
NRCS
Map based on provisional data
February 1, 2012
50% Exceedance
Summer Streamflow Forecasts
Idaho
State Boundary
Major Basins
Percent of Average
> 180
150 - 179
130 - 149
110 - 129
90 - 109
70 - 89
50 - 69
25 - 49
< 25
Not Forecast
NRCS
Map based on provisional data

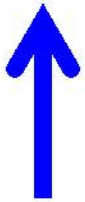
RESERVOIR STORAGE as of Januray 31, 2012				
Reservoir	Percent of Average %	Percent of Capacity %	Current Storage KAF	Capacity KAF
Oakley	121	45	34.2	75.6
Salmon Falls	154	47	85.7	182.6
Magic	142	63	121.1	191.5
Bear Lake	120	77	1091.1	1421.0
Blackfoot	129	81	283.3	348.7
Mackay	133	83	36.8	44.4
Montpelier	194	83	3.3	4.0

RESERVOIR STORAGE
as of Januray 31, 2012

Reservoir	Percent of Average %	Percent of Capacity %	Current Storage KAF	Capacity KAF	Highest End of January Storage Since:
Oakley	121	45	34.2	75.6	2007
Salmon Falls	154	47	85.7	182.6	1987
Magic	142	63	121.1	191.5	1999
Bear Lake	120	77	1091.1	1421.0	2000
Blackfoot	129	81	283.3	348.7	1983
Mackay	133	83	36.8	44.4	1983
Montpelier	194	83	3.3	4.0	3.2 1996

RESERVOIR STORAGE as of Januray 31, 2012							
Reservoir	Percent of Average %	Percent of Capacity %	Current Storage KAF	Capacity KAF	Highest End of January Storage Since:	Febuary 1 Streamflow Forecast % and KAF	
Oakley	121	45	34.2	75.6	2007	94%	32
Salmon Falls	154	47	85.7	182.6	1987	54%	50
Magic	142	63	121.1	191.5	1999	71%	205
Bear Lake	120	77	1091.1	1421.0	2000	64%	150
Blackfoot	129	81	283.3	348.7	1983	75%	55
Mackay	133	83	36.8	44.4	1983	71%	100
Montpelier	194	83	3.3	4.0	3.2 1996	NA	





February 1, 2012 Idaho Surface Water Supply Index (SWSI)

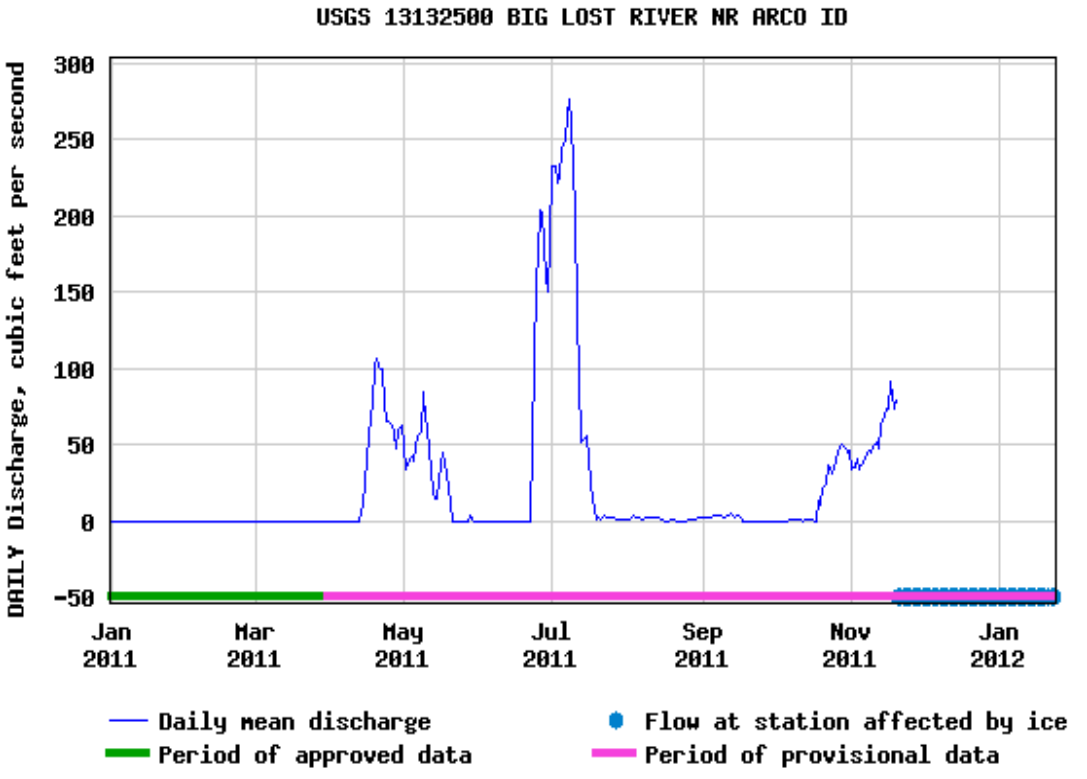
Basin or Region	SWSI Value	Similar Year	Surface Agricultural Water Supply Shortages Occur when SWSI is Less Than
Northern Panhandle	0.8	2008	NA
Spokane	-0.4	2010	NA
Clearwater	-1.0	2004	NA
Salmon	-0.4	2003	NA
Weiser	-1.2	2009	NA
Payette	-0.7	2000	NA
Boise	1.2	2009	-1.3 to -1.6
Big Wood	-0.4	2009	0.5 to 0.7
Little Wood	0.4	2009	-1.3 to -1.6
Big Lost	-0.4	2005	0.3 to 0.5
Little Lost	0.1	2006	1.0 to 1.3
Teton	0.3	2010	-3.7 to -3.9
Henrys Fork	0.0	2010	-3.4 to -3.6
Snake (Heise)	1.4	2009	-1.3 to -1.6
Oakley	1.8	2011	0.3 to 0.5
Salmon Falls	1.4	1996	-0.4 to -0.8
Bruneau	-0.7	2008	NA
Owyhee	0.4	2005	-3.0 to -3.5
Bear River	2.0	2011	-2.3 to -2.6

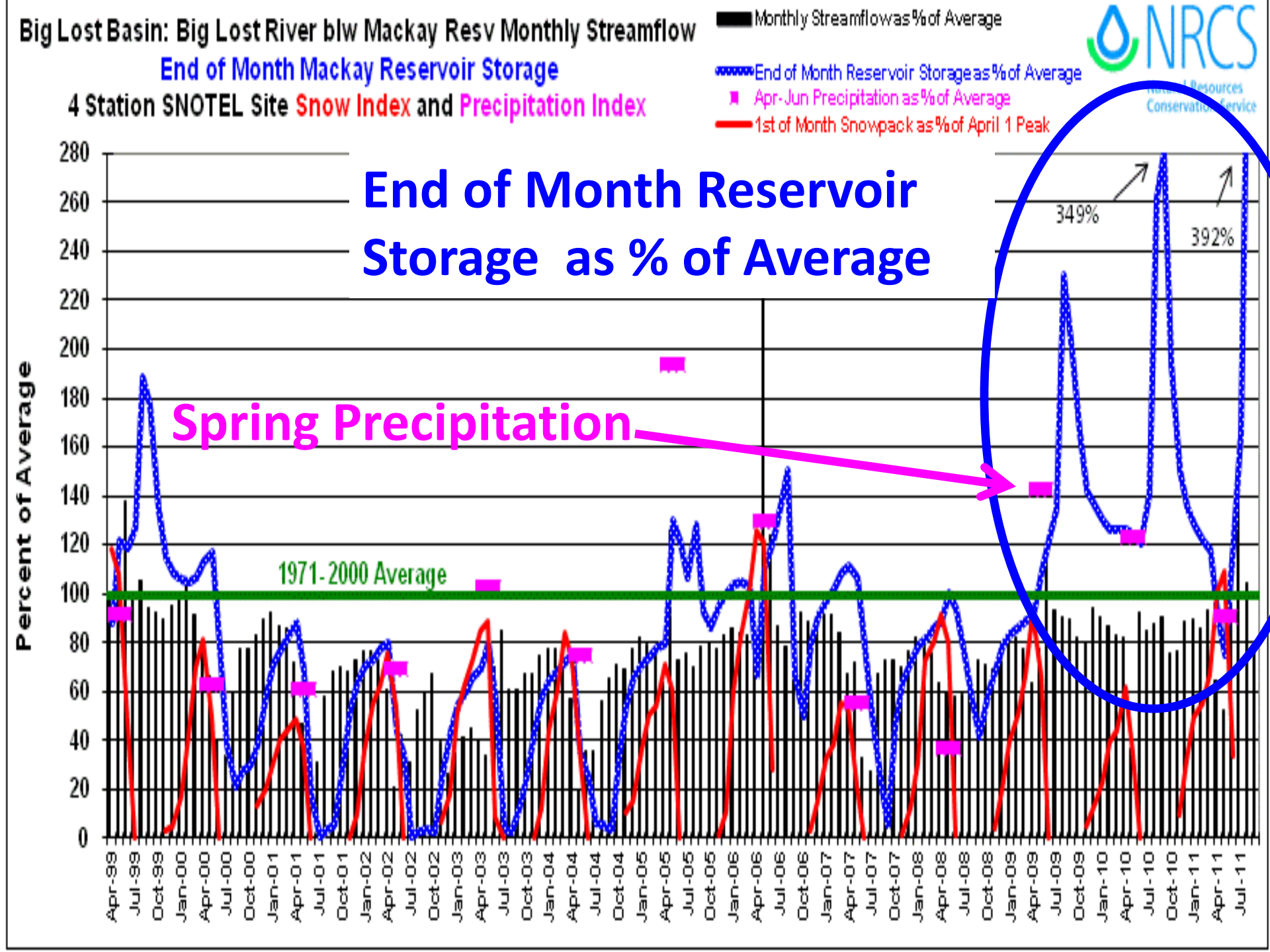
SWSI period is based on the 1981 - 2011 period

But good news is from last year

Dry Big Lost River
Summer of 200?

Frozen Big Lost
January 2012




Big Lost Basin: Big Lost River blw Mackay Resv Monthly Streamflow
End of Month Mackay Reservoir Storage
4 Station SNOTEL Site Snow Index and Precipitation Index
Monthly Streamflow as % of Average
End of Month Reservoir Storage as % of Average
Apr-Jun Precipitation as % of Average
1st of Month Snowpack as % of April 1 Peak
NRCS
End of Month Reservoir Storage as % of Average
Spring Precipitation
1971-2000 Average
349%
392%
Percent of Average
280
260
240
220
200
180
160
140
120
100
80
60
40
20
0
Apr-99
Jul-99
Oct-99
Jan-00
Apr-00
Jul-00
Oct-00
Jan-01
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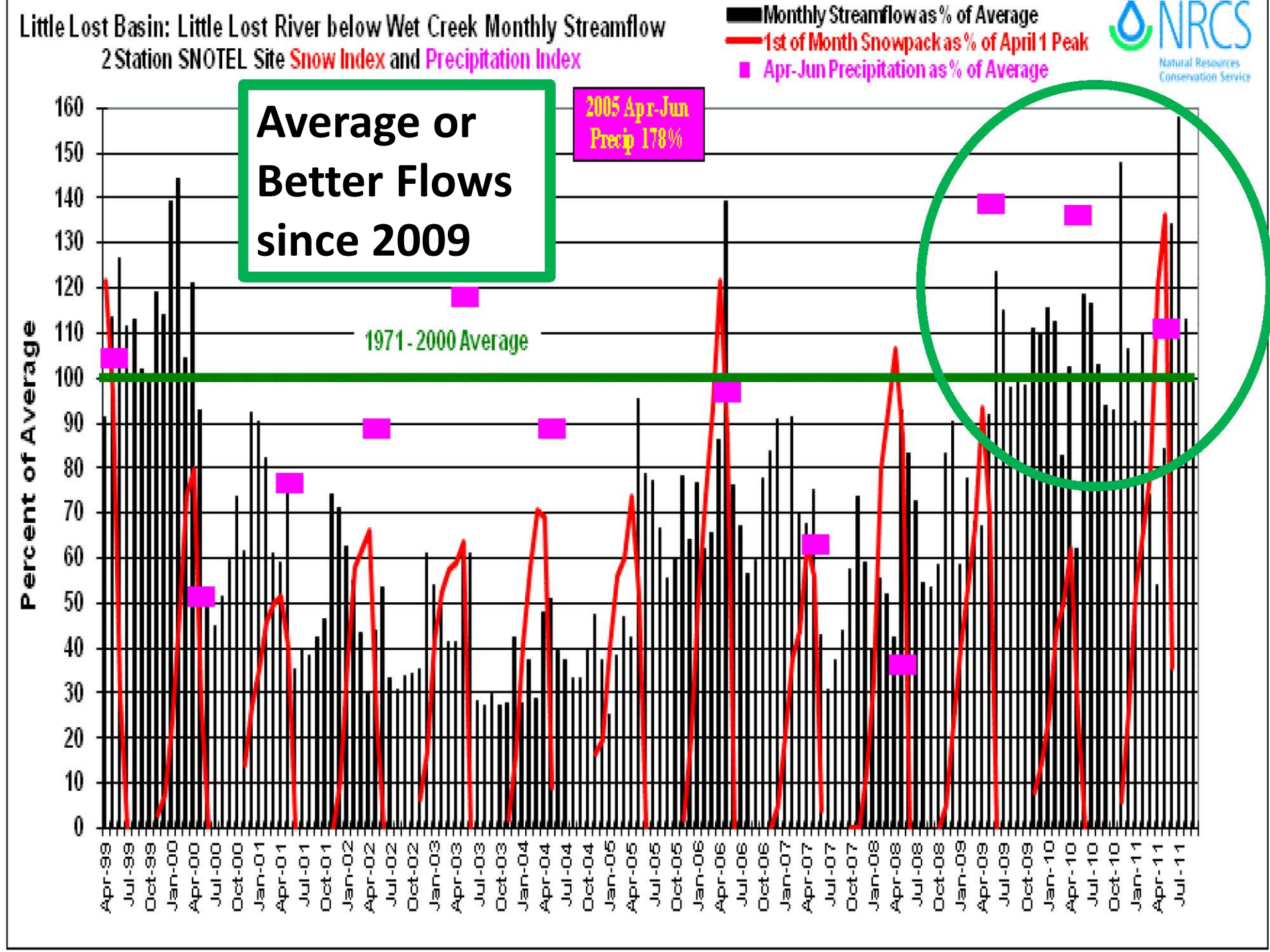
Jan-11
Apr-11
Jul-11


Little Lost Basin: Little Lost River below Wet Creek Monthly Streamflow
2 Station SNOTEL Site Snow Index and Precipitation Index
Monthly Streamflow as % of Average
1st of Month Snowpack as % of April 1 Peak
Apr-Jun Precipitation as % of Average
NRCS
Natural Resources Conservation Service
Average or Better Flows since 2009
2005 Apr-Jun Precip 178%
1971 - 2000 Average
Percent of Average
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
Apr-99
Jul-99
Oct-99
Jan-00
Apr-00
Jul-00
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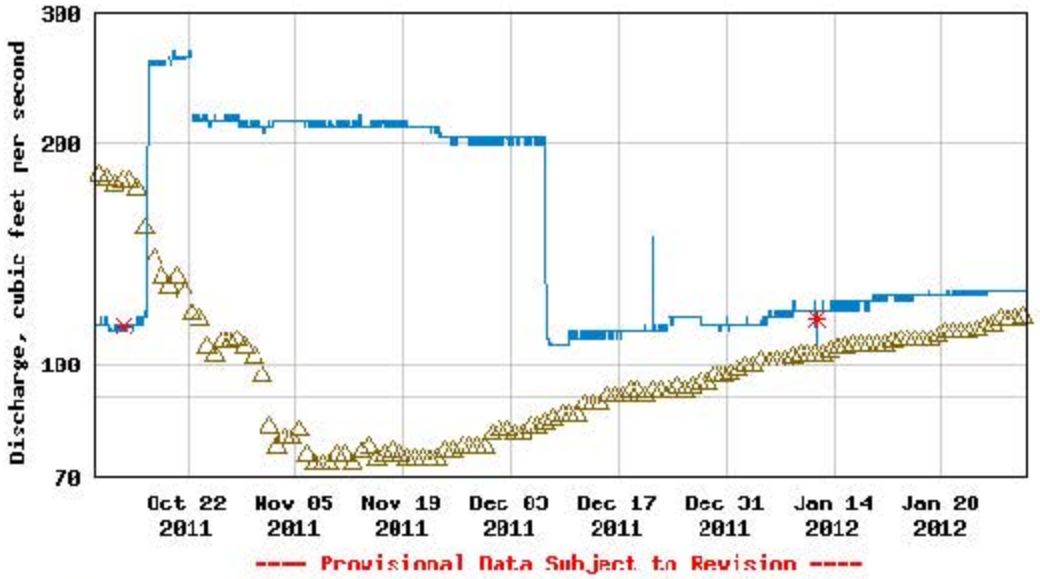
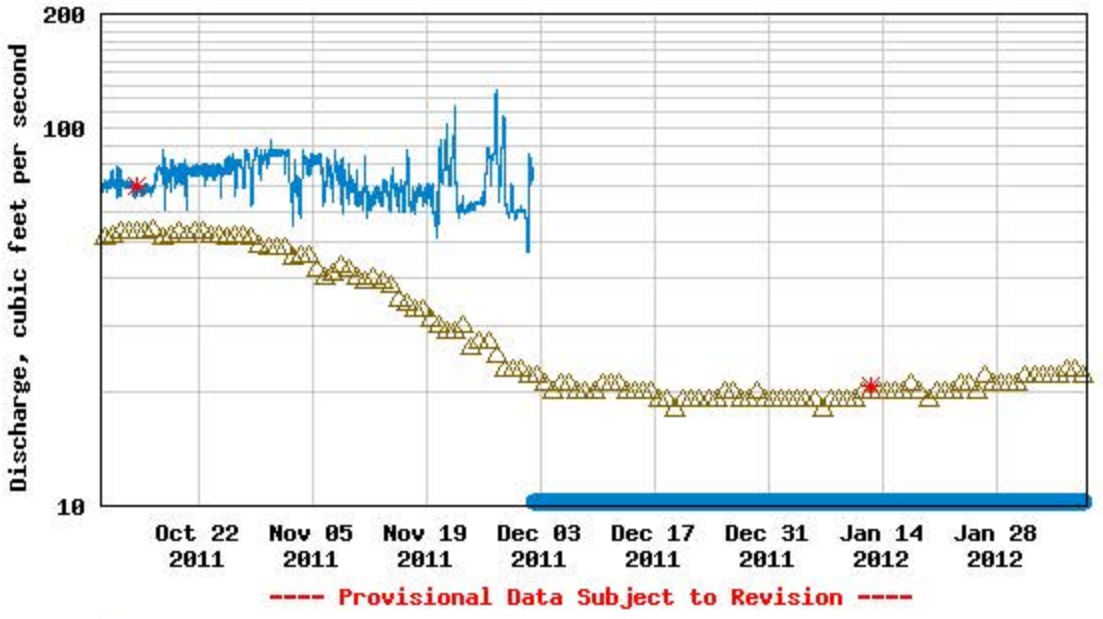
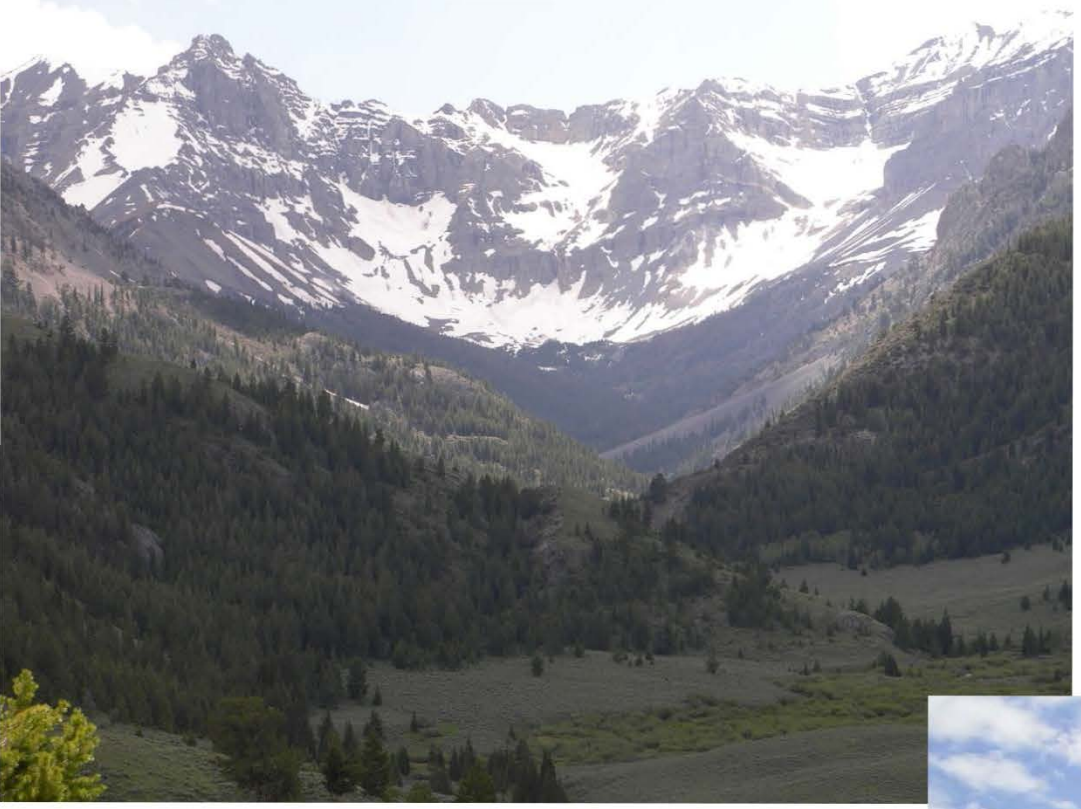
Jan-11
Apr-11
Jul-11

USGS 13127000 BIG LOST RIVER BL MACKAY RES NR MACKAY ID



3118700 LITTLE LOST RIVER BL WET CREEK NR HOWE ID



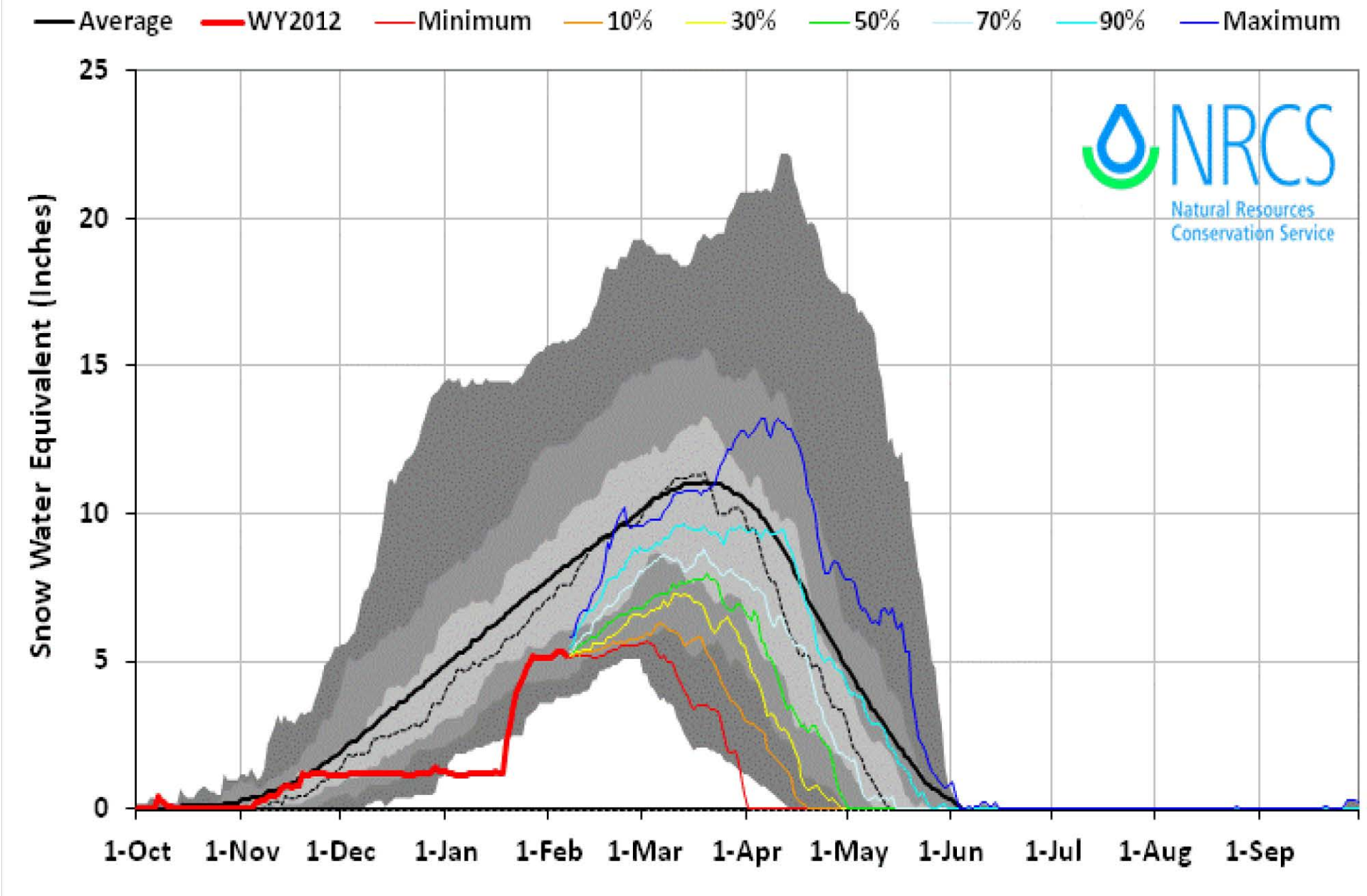


Little Lost Basin
Dry Creek Basin
June 30, 2010

Dry Creek's dry river channel
August 25, 2009

Owyhee Basin 2012 Snow Water with Non-Exceedence Projections (7 sites)

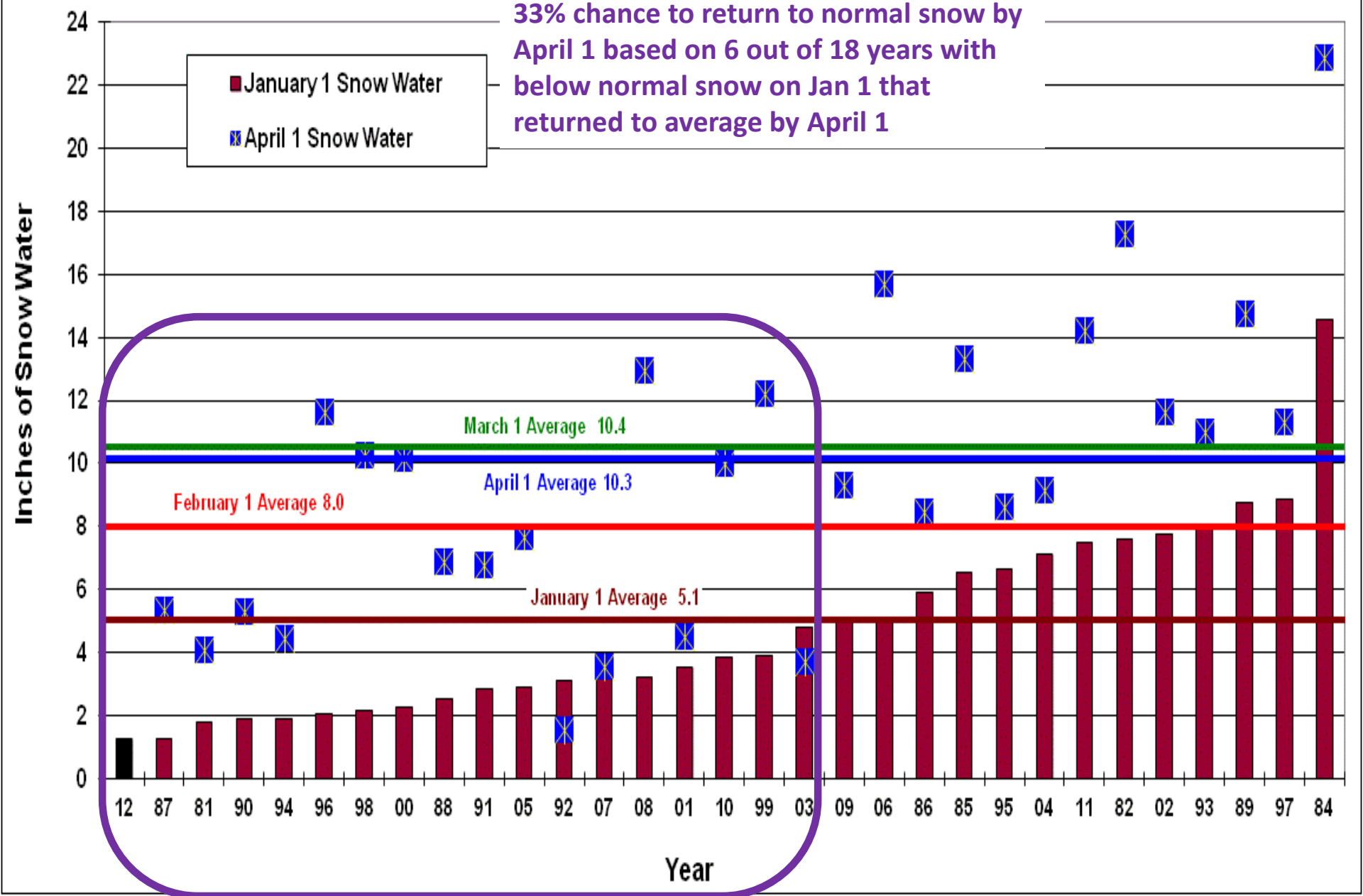
Based on Provisional SNOTEL data as of Feb 06, 2012



Snow Index for the Owyhee River, ID 1987- Jan 2012

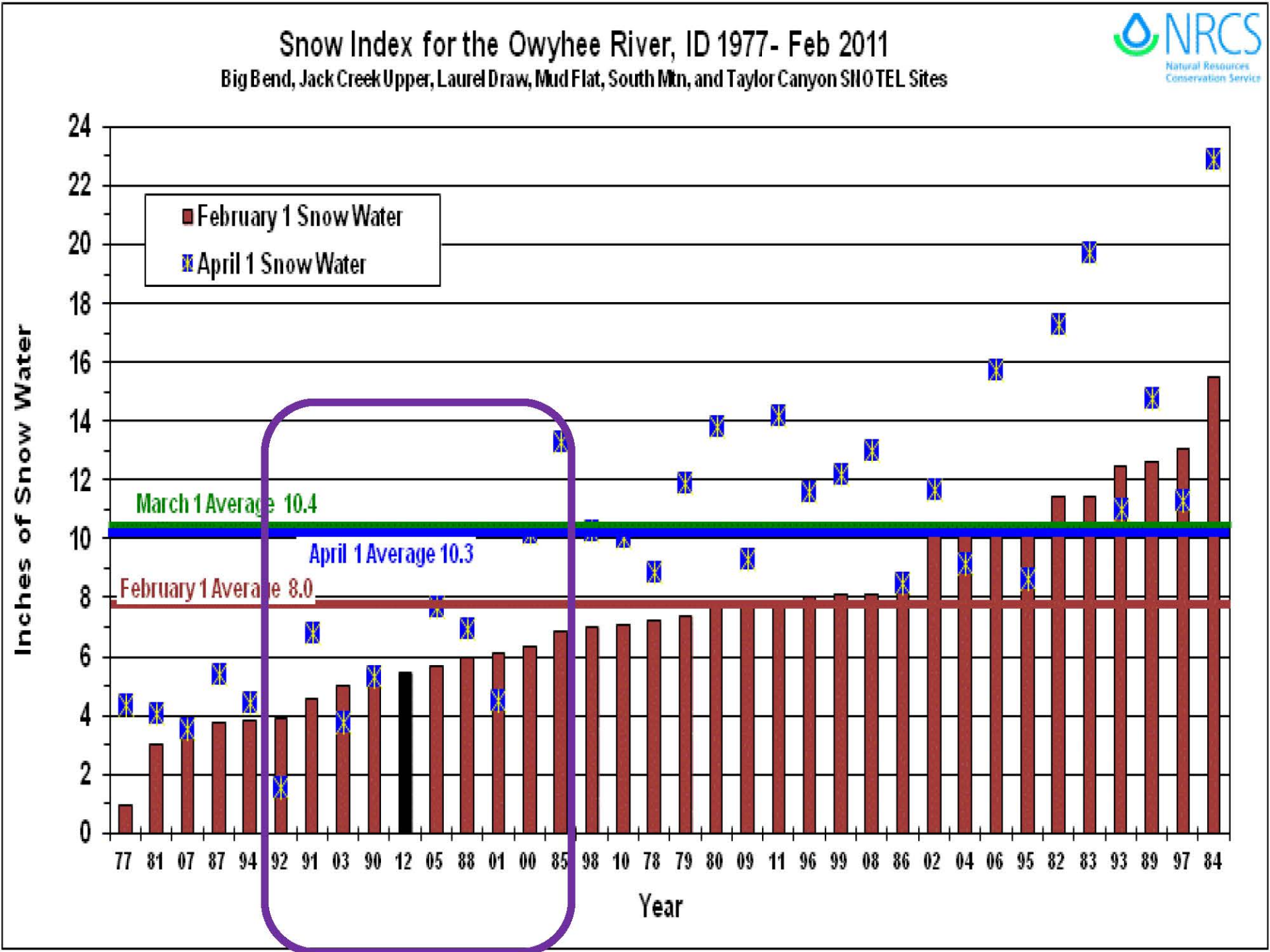
Big Bend, Jack Creek Upper, Laurel Draw, Mud Flat, South Mtn, and Taylor Canyon SNOTEL Sites

NRCS Natural Resources Conservation Service



Snow Index for the Owyhee River, ID 1977- Feb 2011

Big Bend, Jack Creek Upper, Laurel Draw, Mud Flat, South Mtn, and Taylor Canyon SNOTEL Sites



New Normals For Water Year 2013

Based on 1981-2010 Period

Drop those Wet 1970s & Add the Dry 2000s

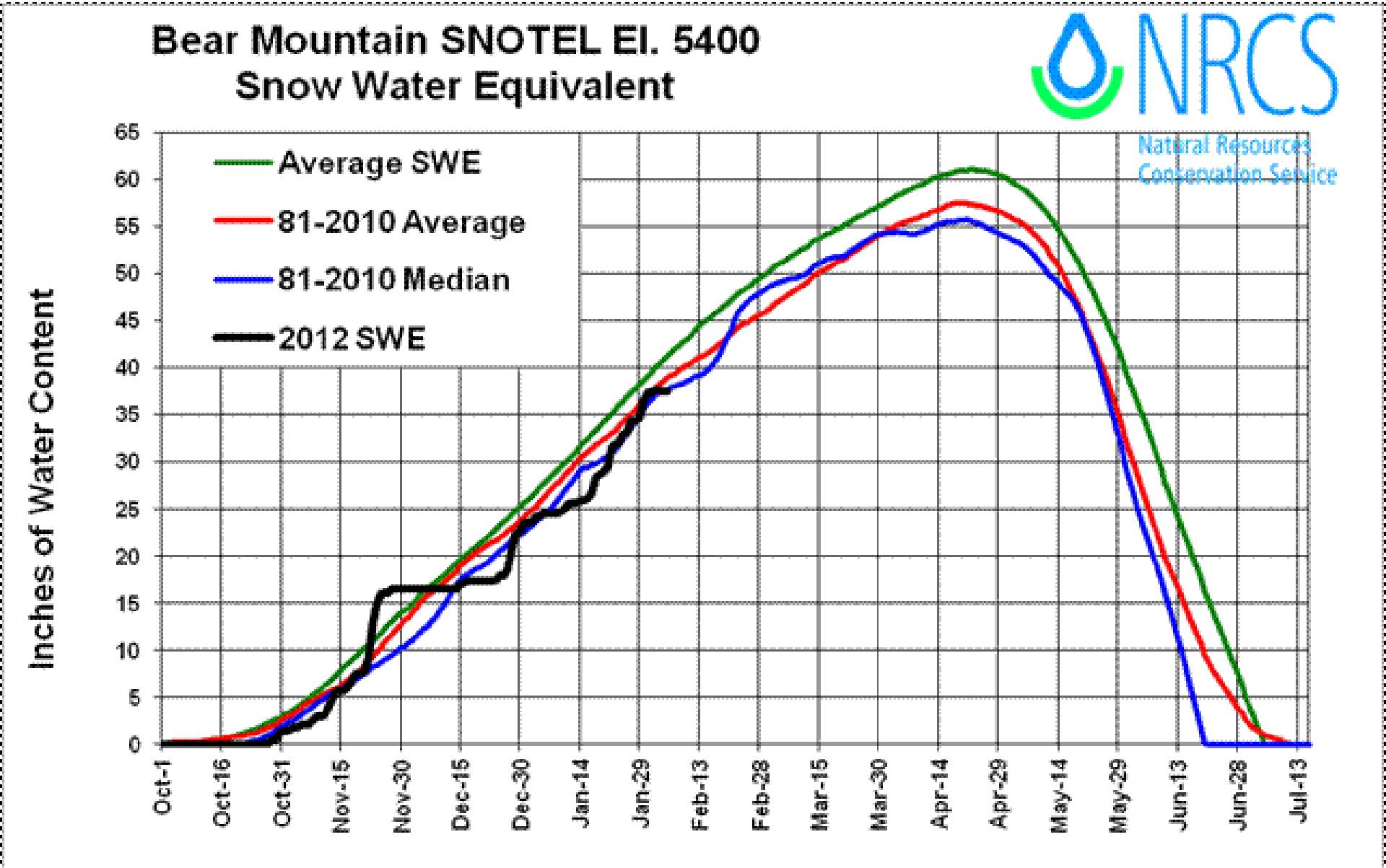
Snow Water Equivalent will be a Median

Medians use daily data and are not smooth

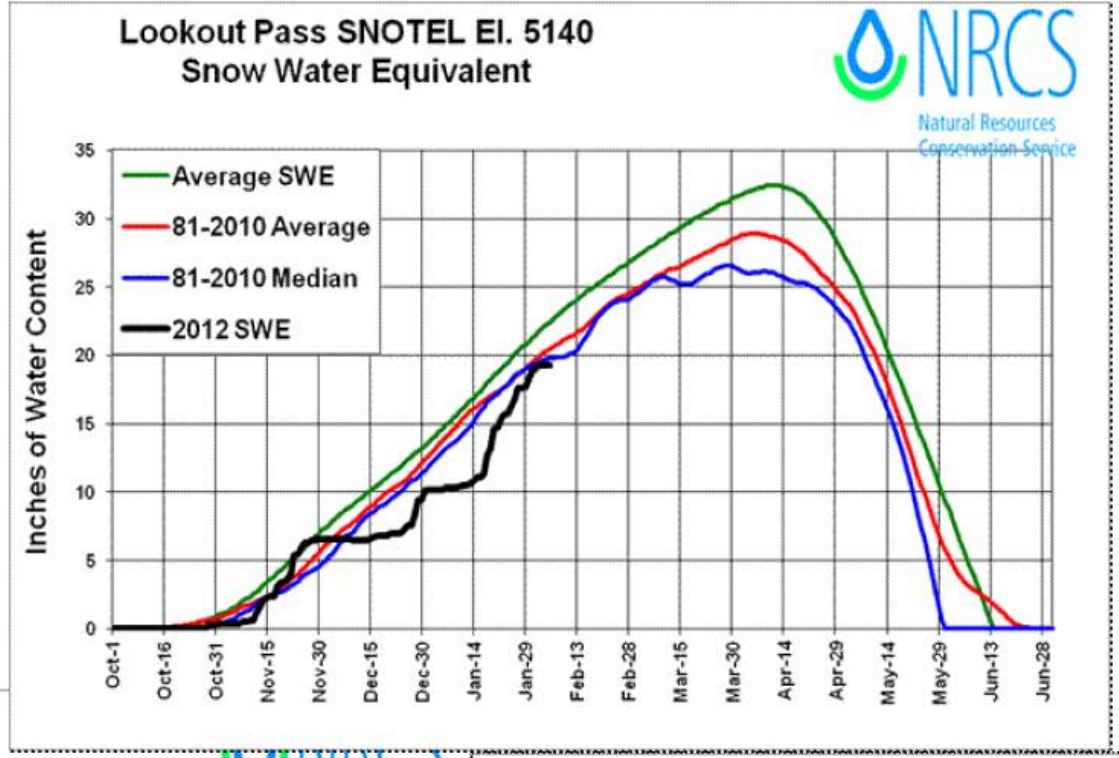
May be Normal means new peaks and new lows in the future….. or do we just have more data and faster computers

NEW! 1981 - 2010 SNOTEL 30-Year Normals Now Available from 30 Year Average Web Page

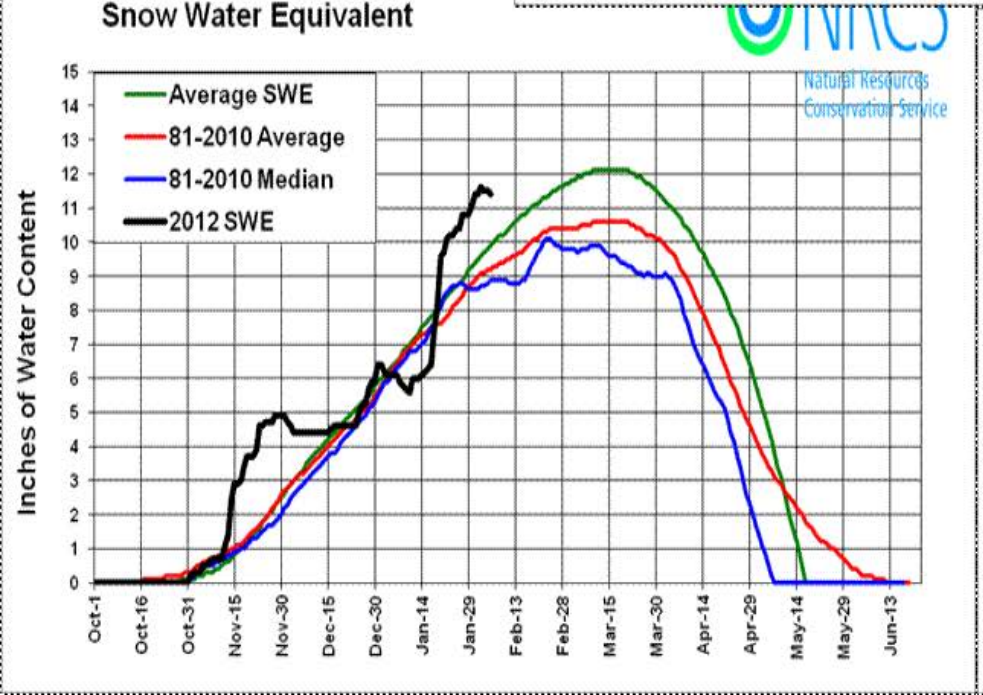
Please read the implementation information, the operational use of the new normals will start in October of 2012. Monthly 1981 - 2010 Normals, Idaho Data Collection Area Only



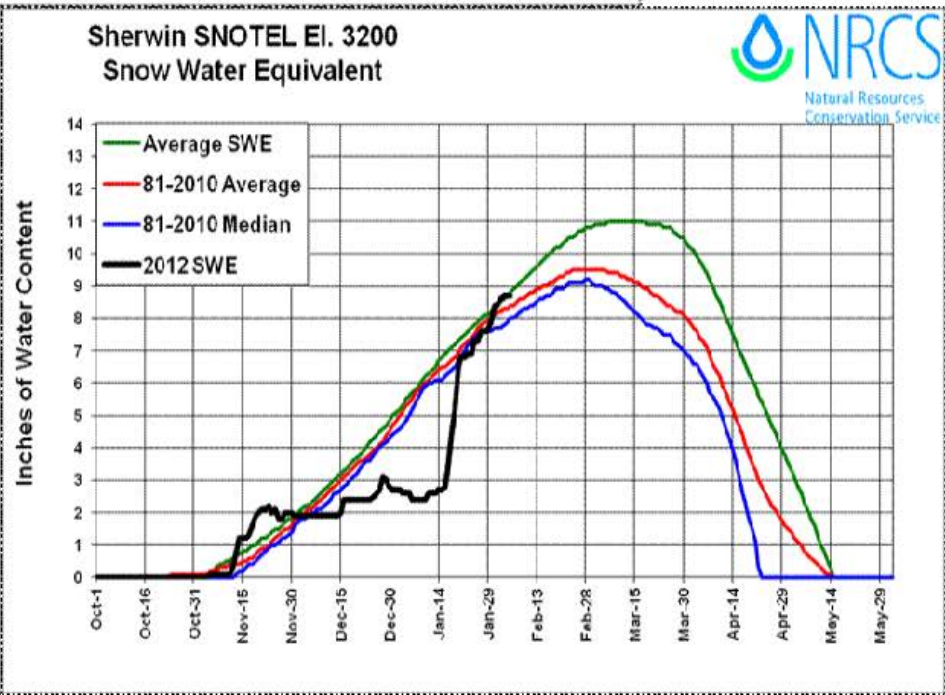
Lookout Pass SNOTEL El. 5140
Snow Water Equivalent

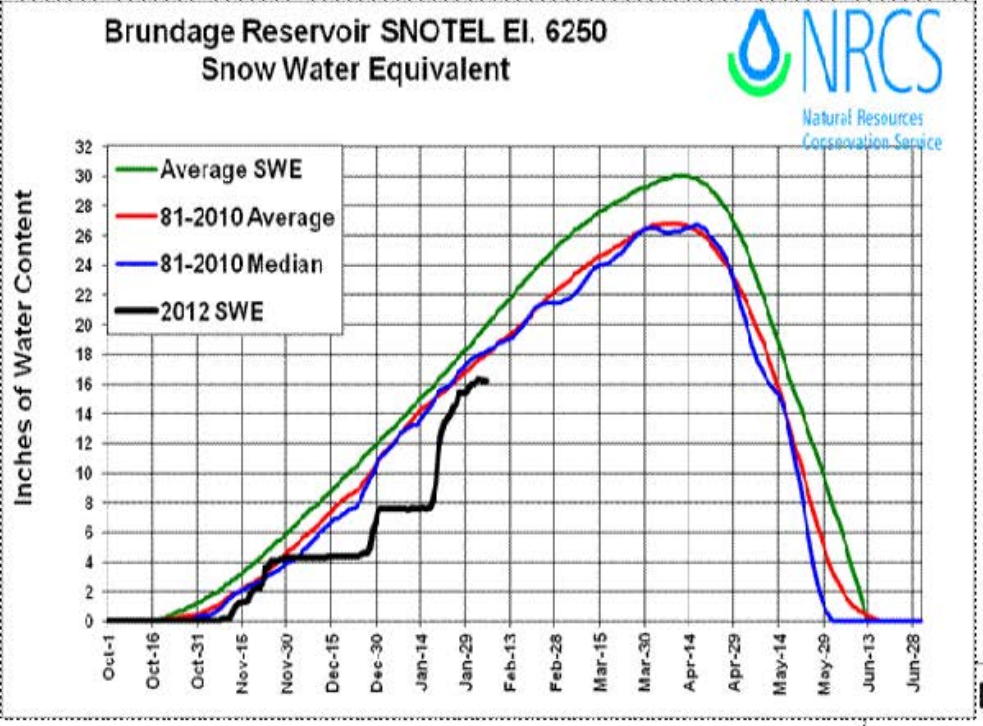


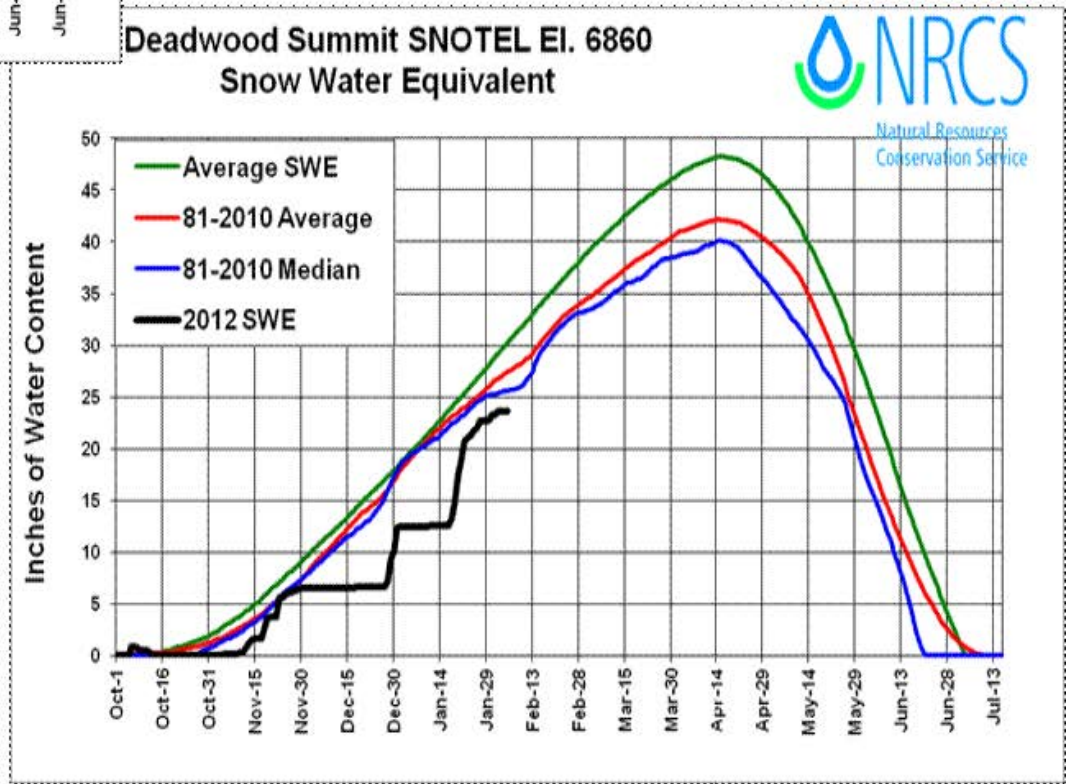
Humboldt Gulch SNOTEL El. 4250
Snow Water Equivalent



Sherwin SNOTEL El. 3200
Snow Water Equivalent





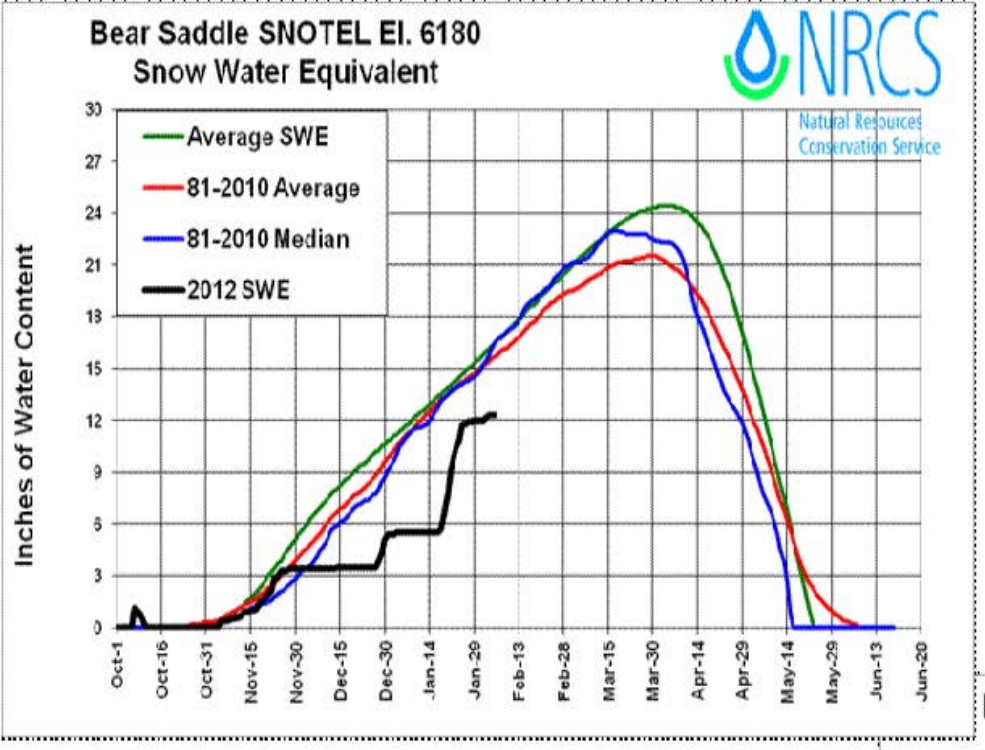


Deadwood Summit 23.6 SWE Feb 8, 2011

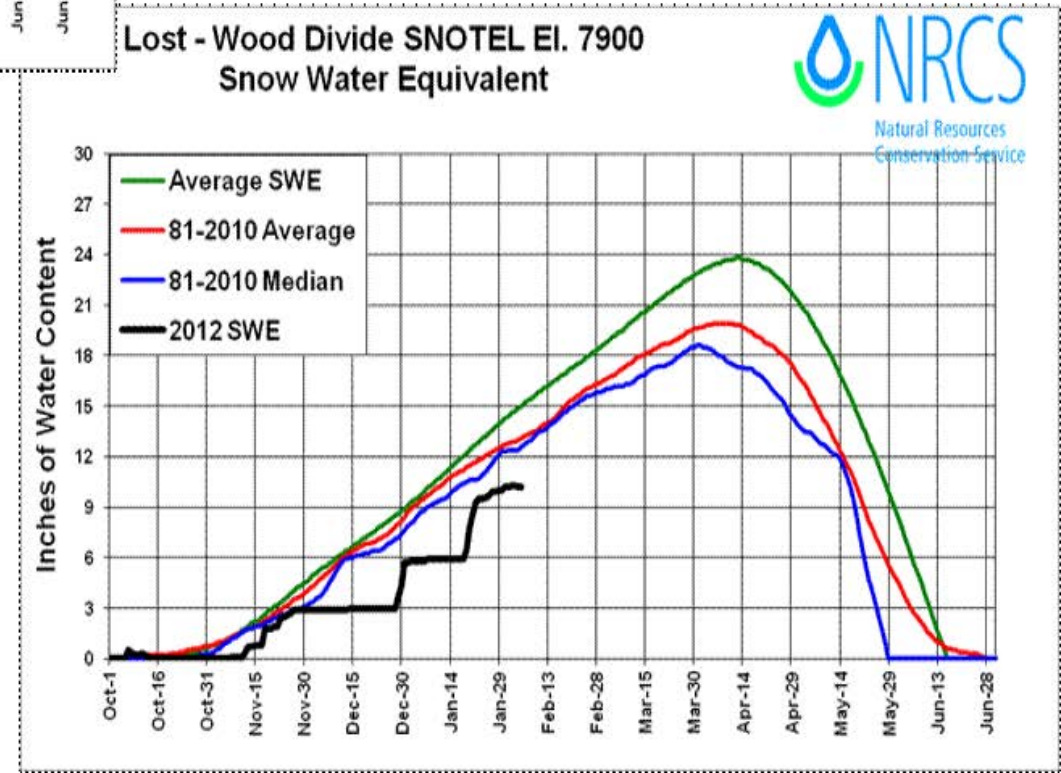
49% of 1971-2000 Peak

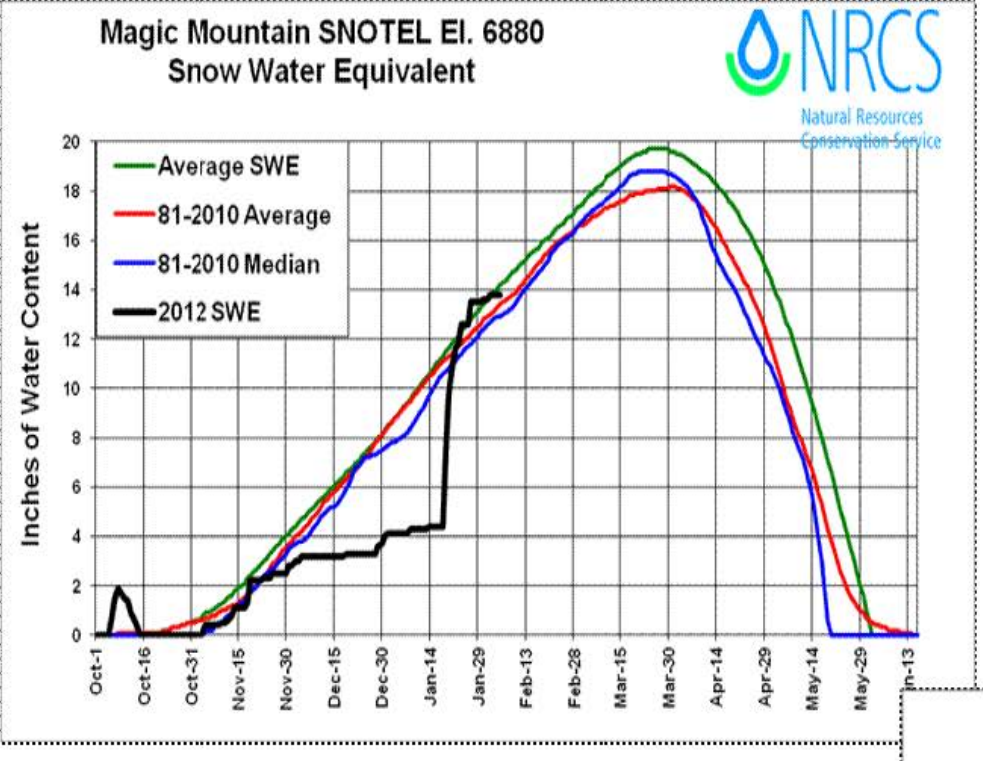
59% of 1981-2010 Median Peak

Bear Saddle SNOTEL El. 6180
Snow Water Equivalent

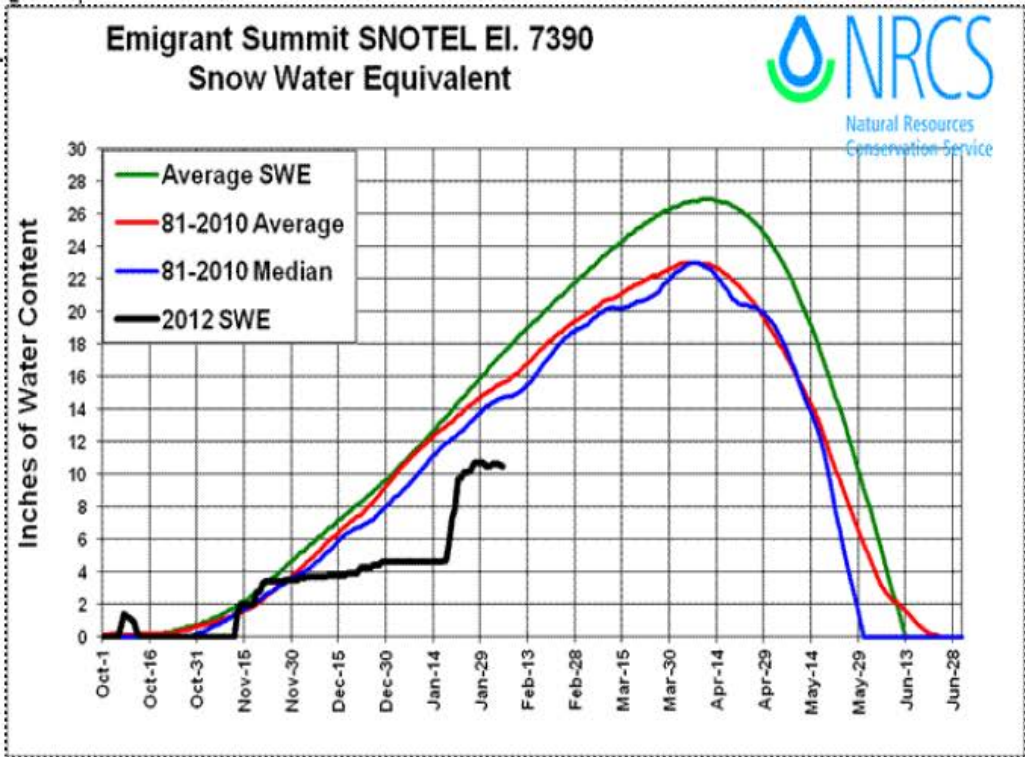


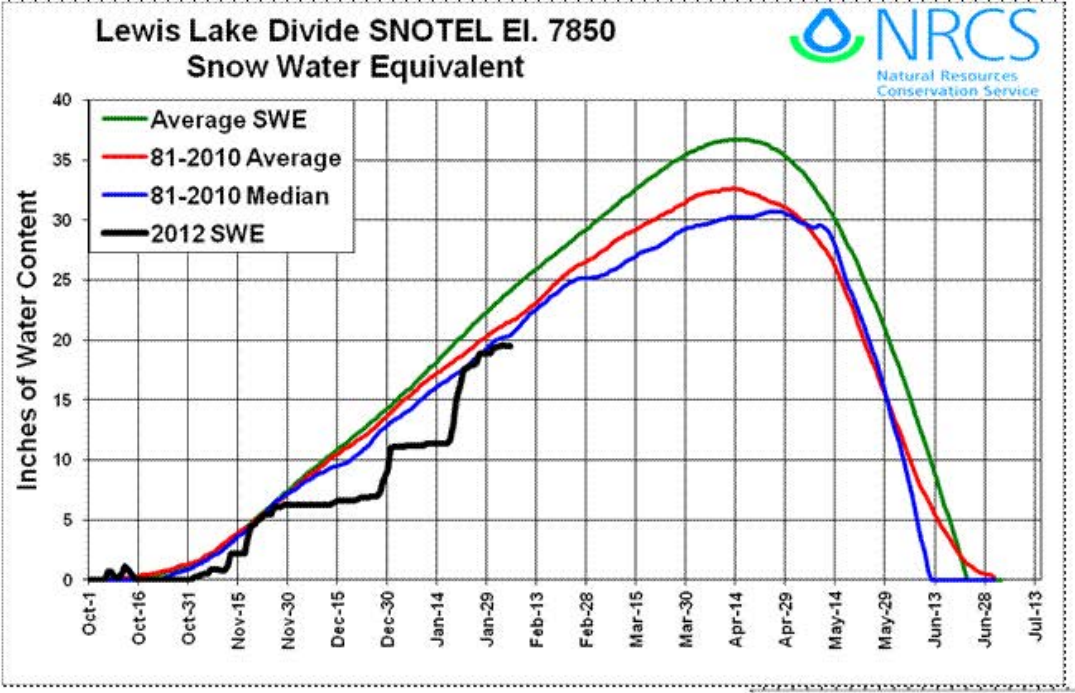
Lost - Wood Divide SNOTEL El. 7900
Snow Water Equivalent





9.1 inches of snow water in 10 days

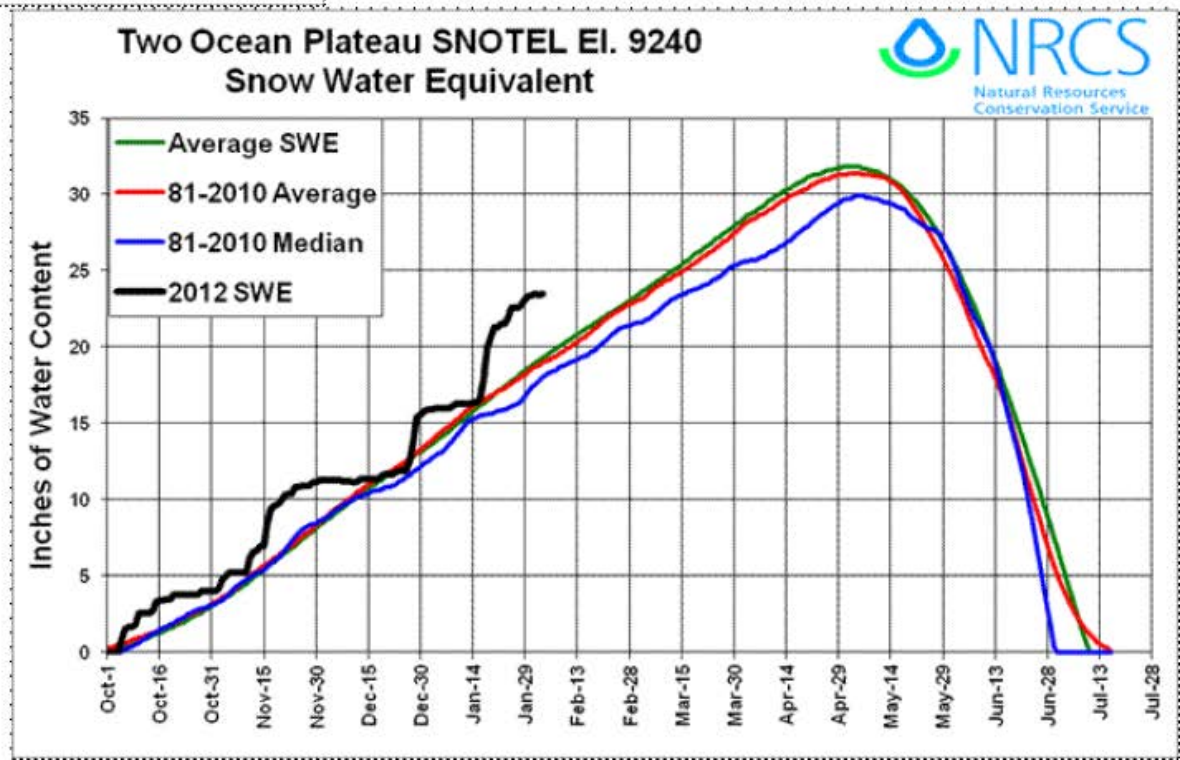


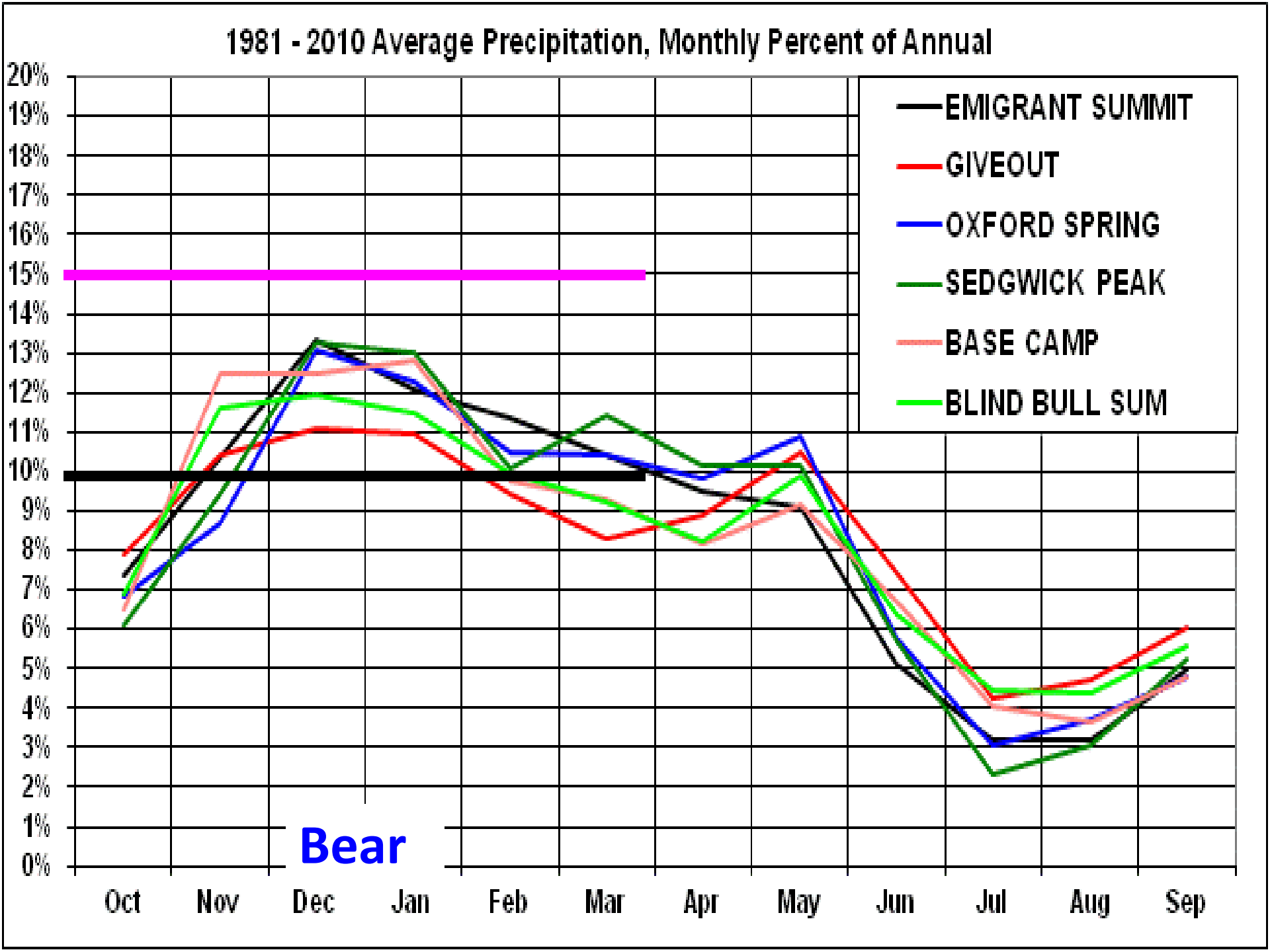


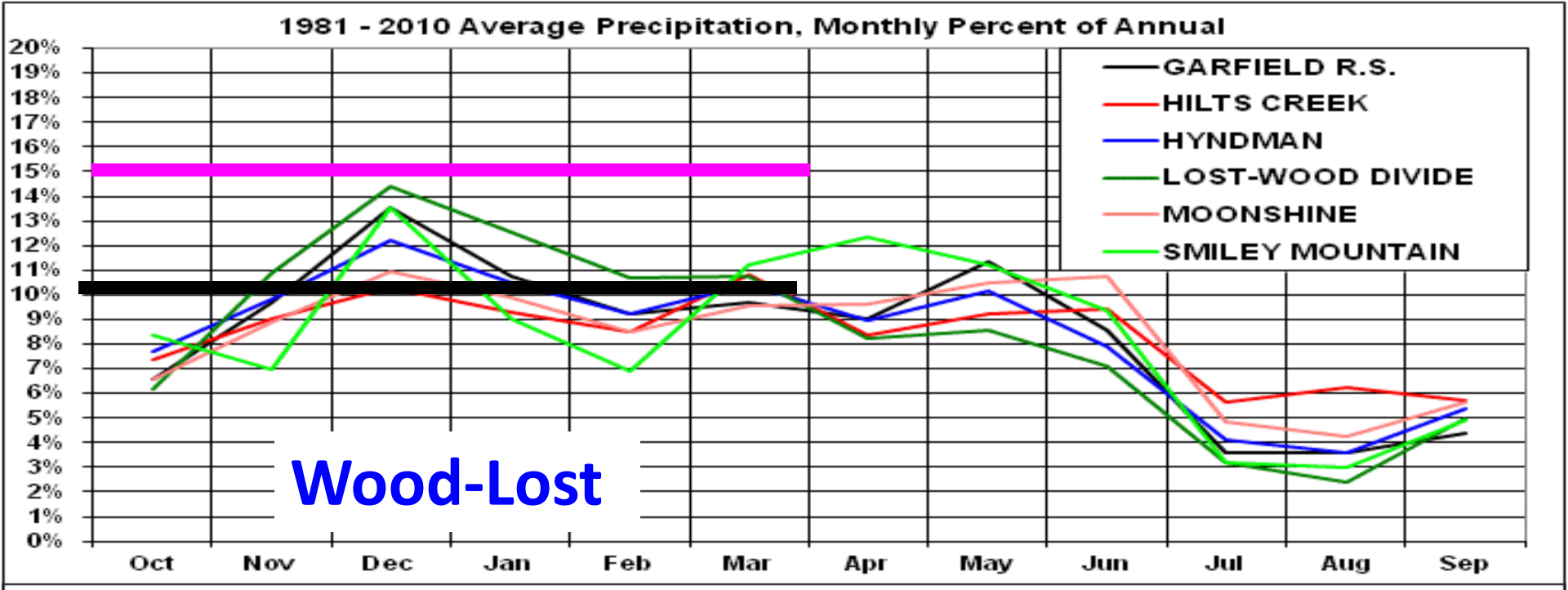
Lewis Lake Divide SWE Feb 8, 2011

19.5” **53% of 1971-2000 Peak**

64% of 1981-2010 Median Peak




1981 - 2010 Average Precipitation, Monthly Percent of Annual
20%
19%
18%
17%
16%
15%
14%
13%
12%
11%
10%
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
EMIGRANT SUMMIT
GIVEOUT
OXFORD SPRING
SEDGWICK PEAK
BASE CAMP
BLIND BULL SUM
Bear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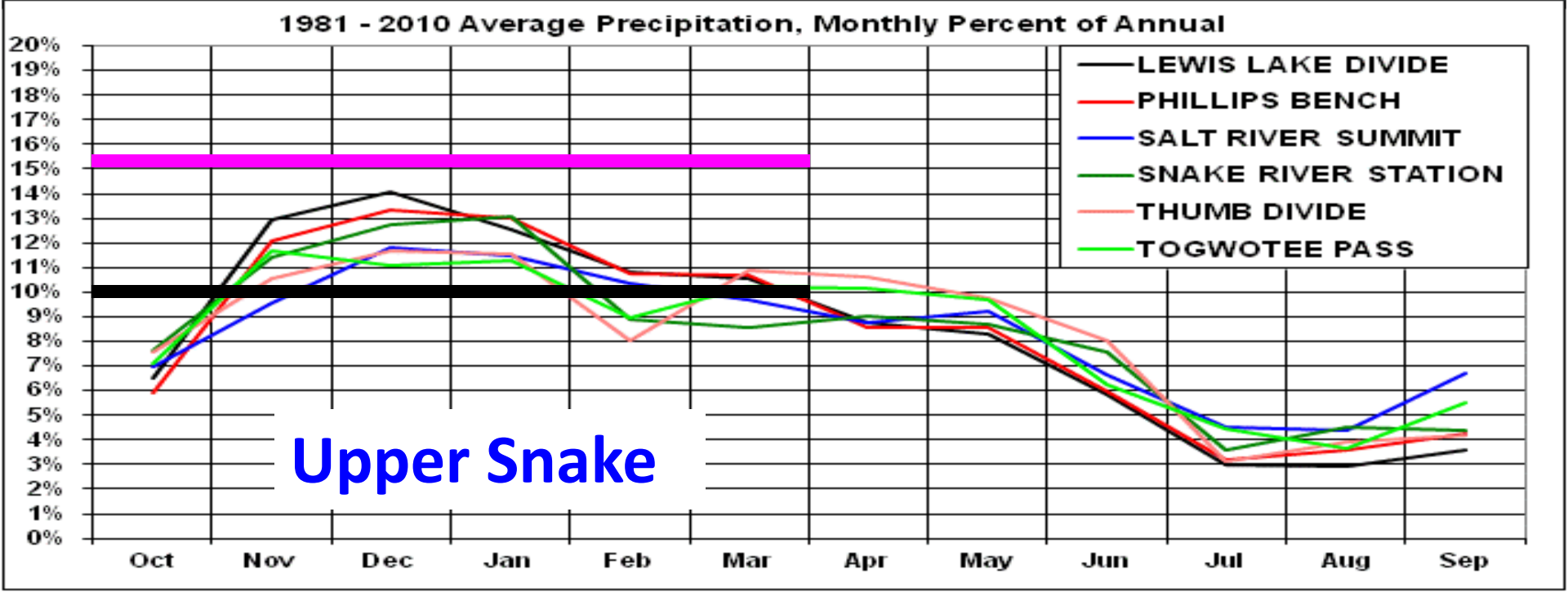
14%
13%
12%
11%
10%
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
GARFIELD R.S.
HILTS CREEK
HYNDMAN
LOST-WOOD DIVIDE
MOONSHINE
SMILEY MOUNTAIN
Wood-Lost


1981 - 2010 Average Precipitation, Monthly Percent of Annual
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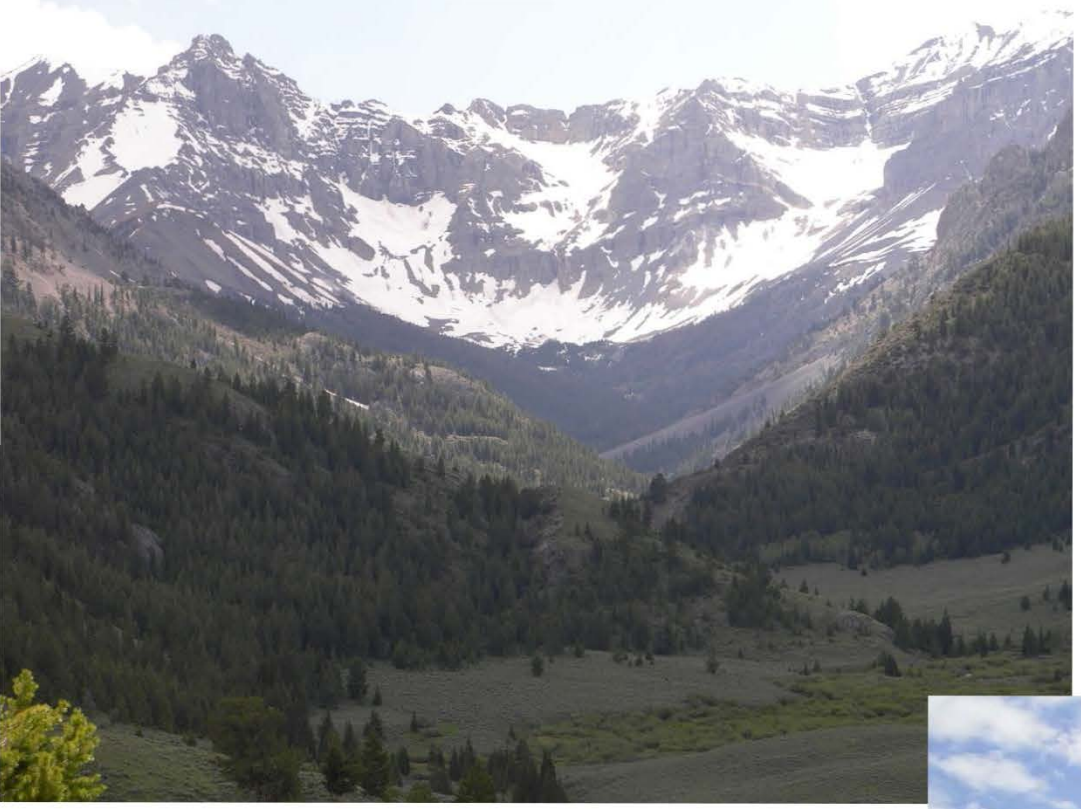
15%
14%
13%
12%
11%
10%
9%
8%
7%
6%
5%
4%
3%
2%
1%
0%
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
LEWIS LAKE DIVIDE
PHILLIPS BENCH
SALT RIVER SUMMIT
SNAKE RIVER STATION
THUMB DIVIDE
TOGWOTEE PASS
Upper Snake



Little Lost's
Dry Creek Basin
June 30, 2010

Dry Creek's dry river channel
August 25, 2009

Questions/ Comments