

Idaho Water Supply Committee

February 8, 2008

Water Supply Outlook and Snow Survey Update

- Snowpack Information
- Reservoir Storage
- Water Supply

Savage Pass SNOTEL, Lochsa headwaters
January 16, 2008

Precipitation gage non responsive!

Phil Morrisey, Hydrologist
USDA, NRCS, Boise ID

Mountain Snowpack as of March 1, 2008

Legend

percent

> 180

150 - 180

130 - 149

110 - 129

90 - 109

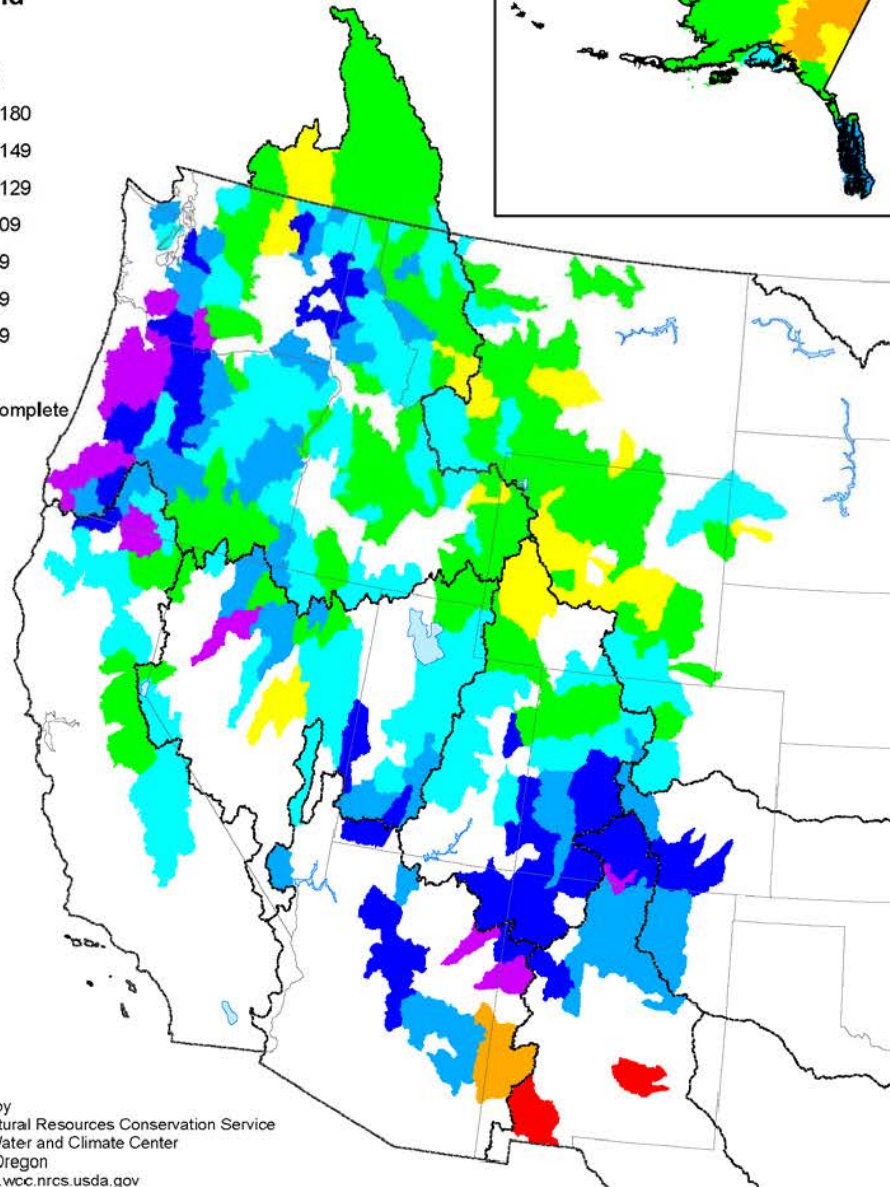
70 - 89

50 - 69

25 - 49

< 25

Not Complete



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

March 1, 2008
Idaho Snowpack

State Boundary

Major Basins

Percent of Average

>150

130 - 149

110 - 129

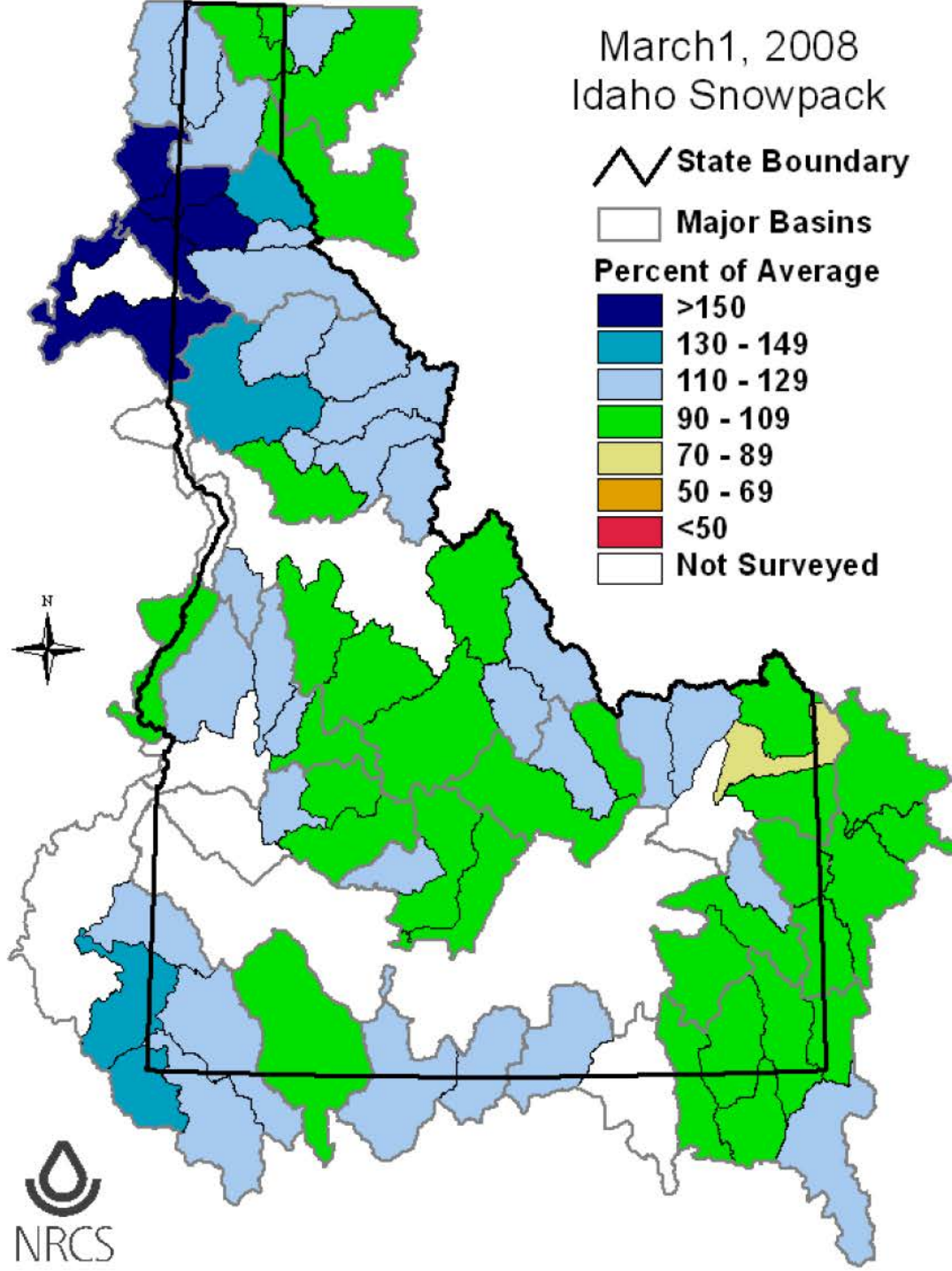
90 - 109

70 - 89

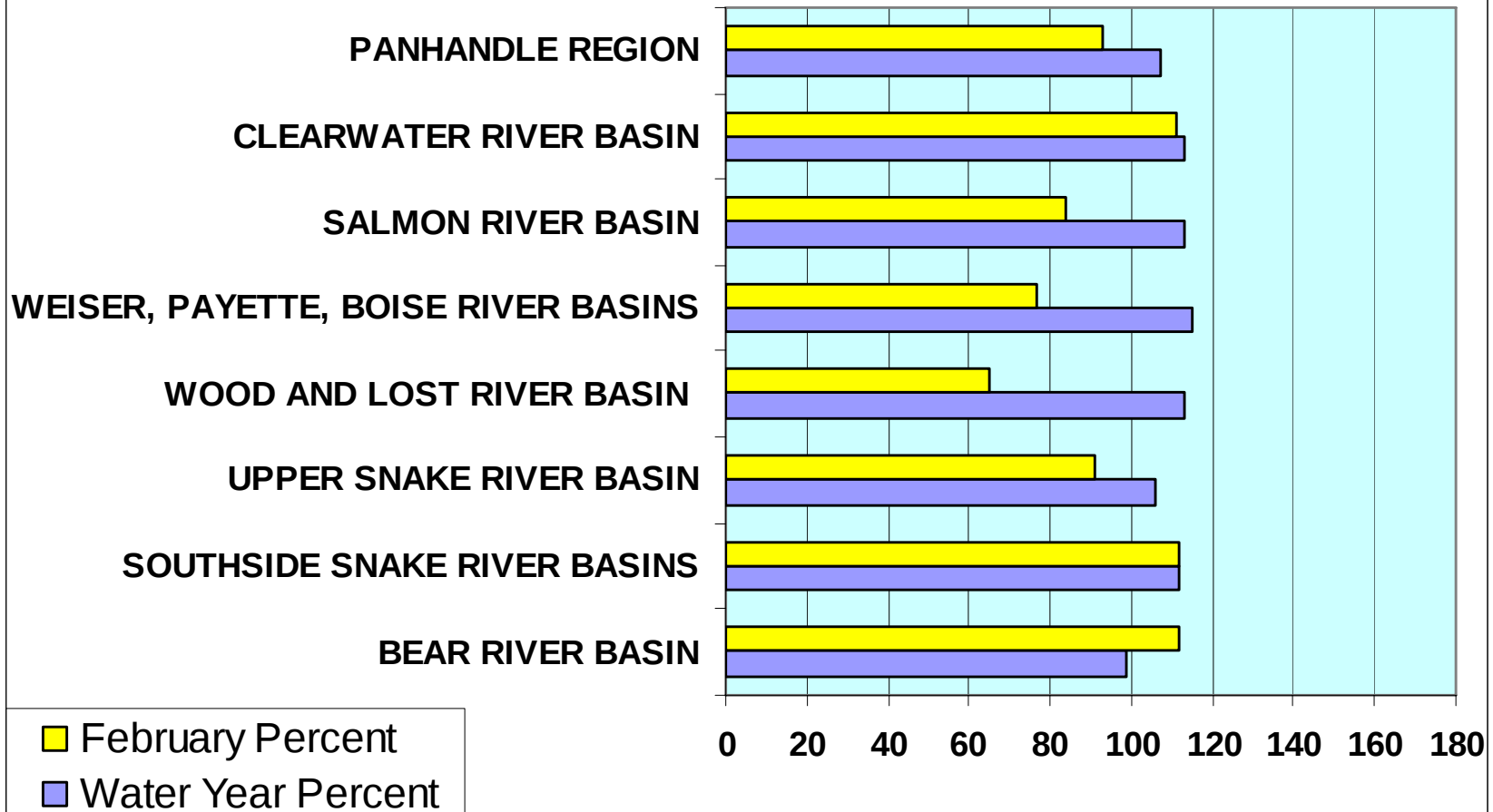
50 - 69

<50

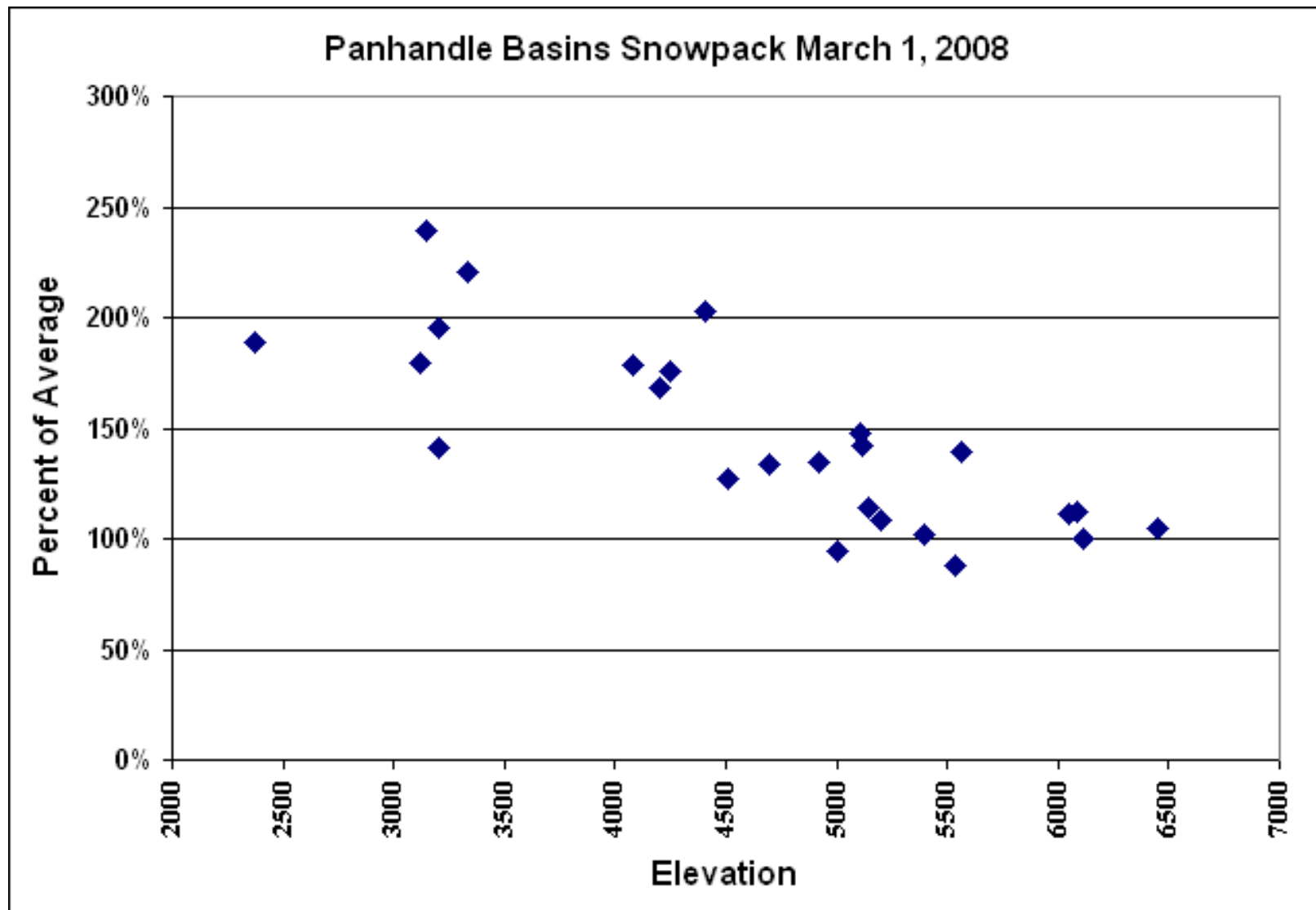
Not Surveyed



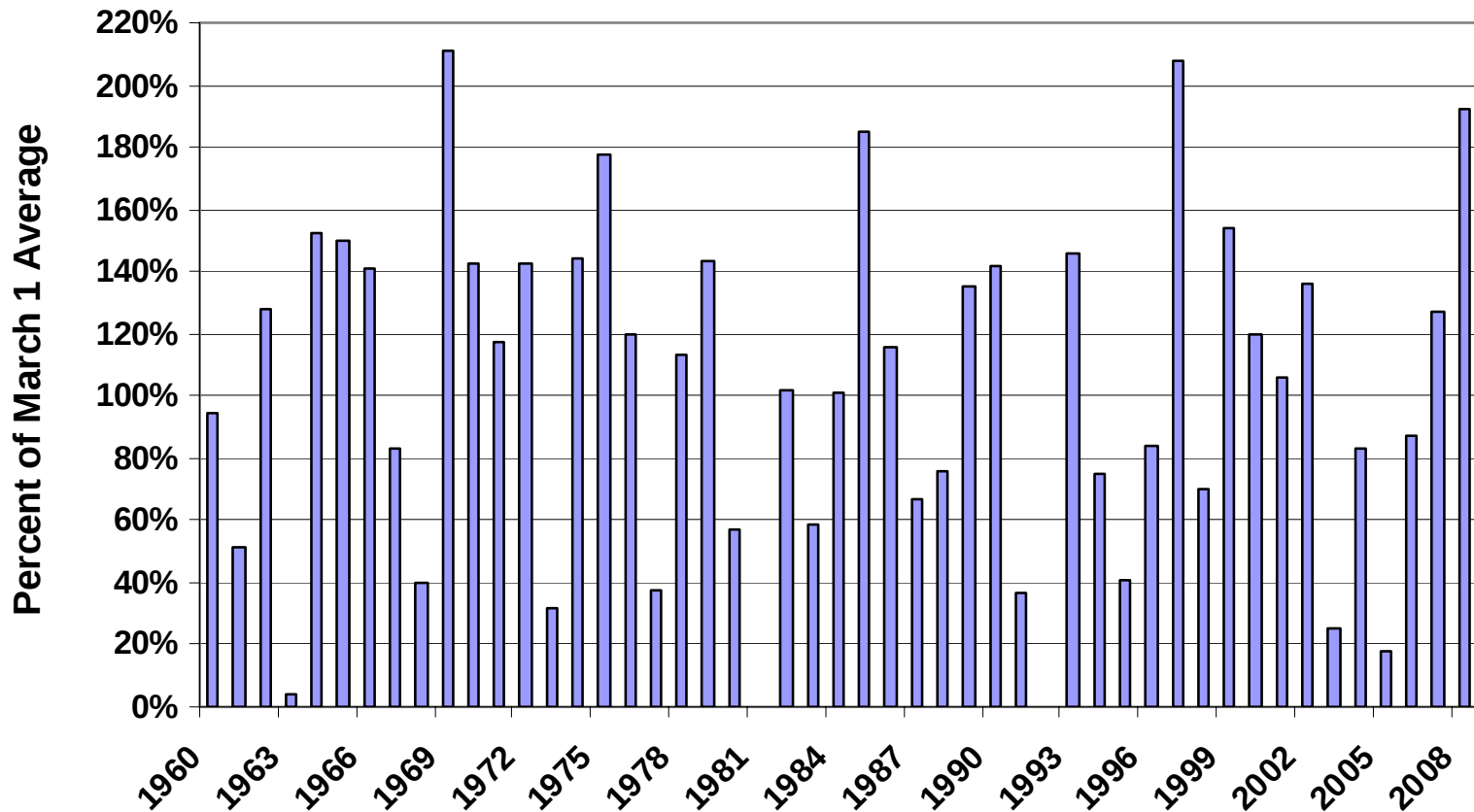
Idaho SNOTEL Precipitation 2008 as Percent of Average



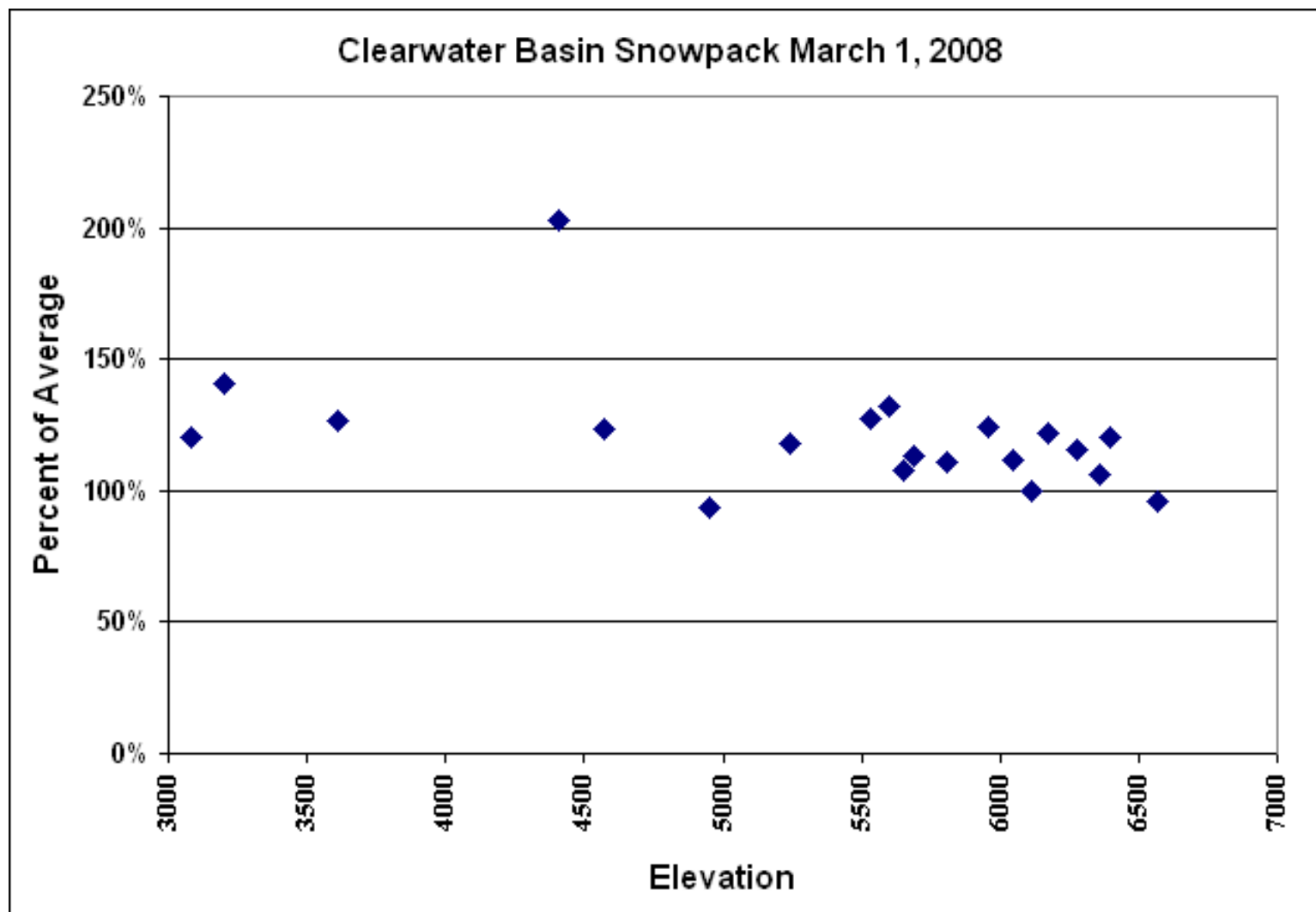
Panhandle Region



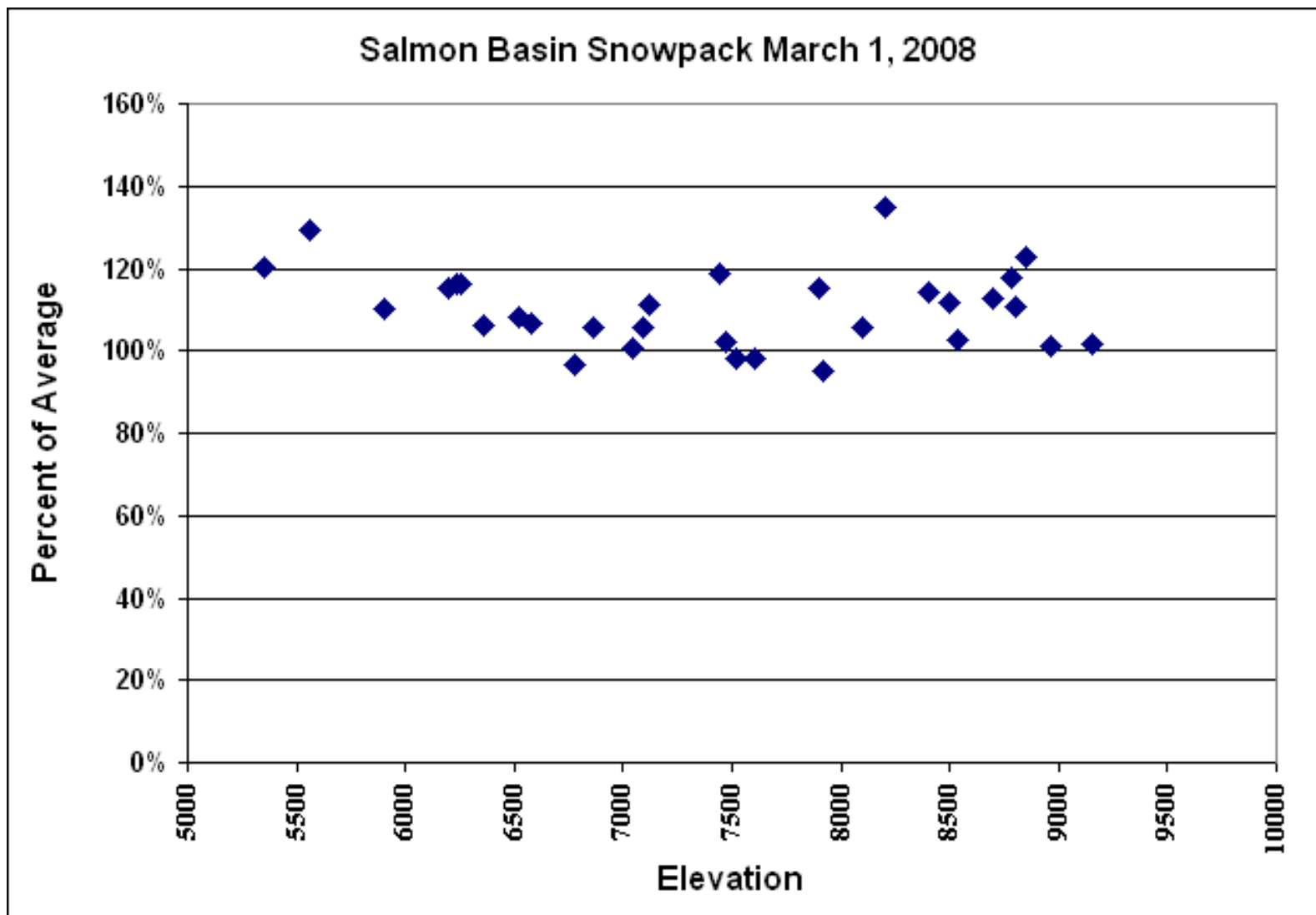
Benton Meadow, Fourth of July Snow Courses Combined March 1 SWE. Low Elevation Sites in Idaho Panhandle



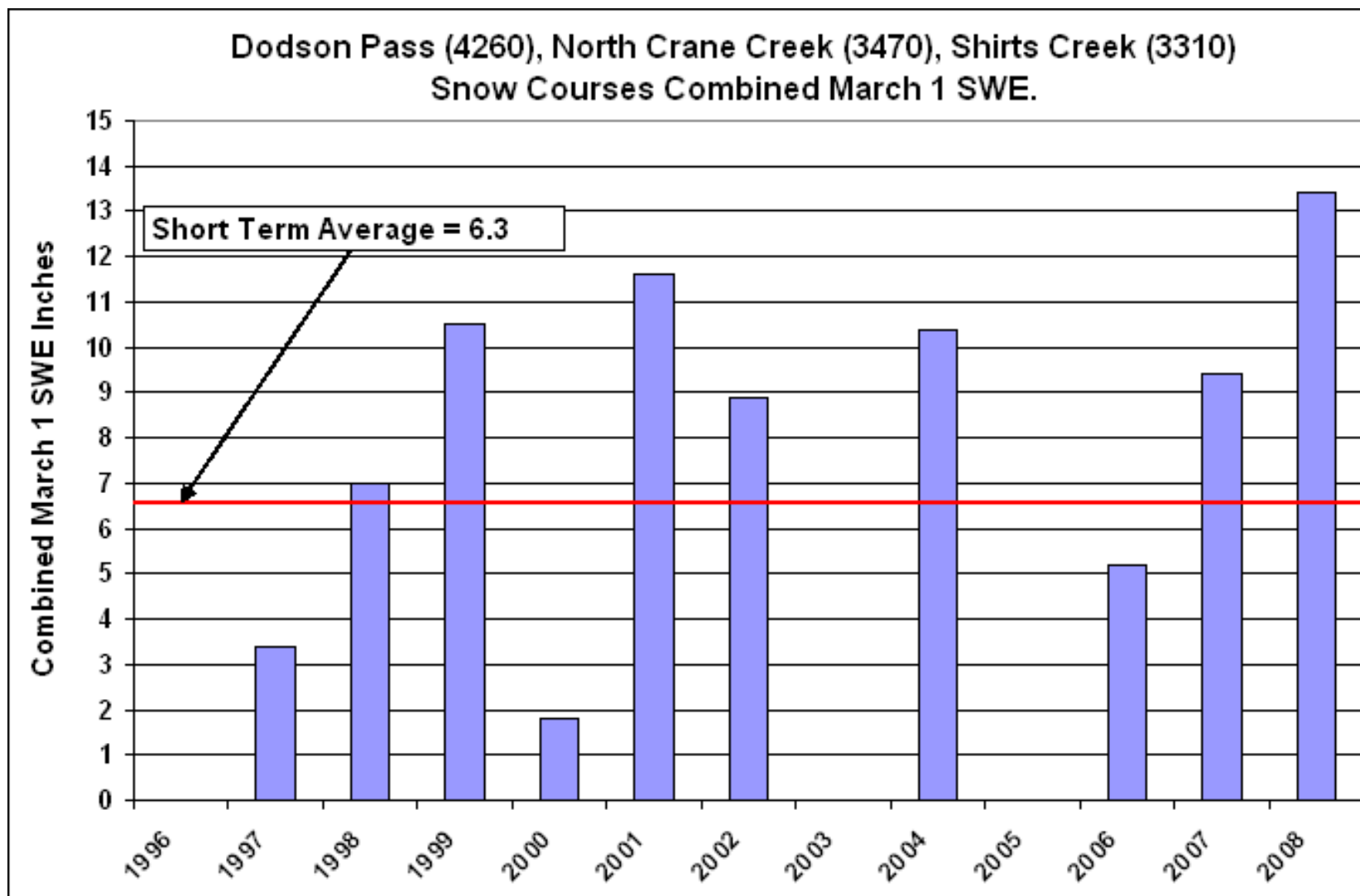
Clearwater Basin



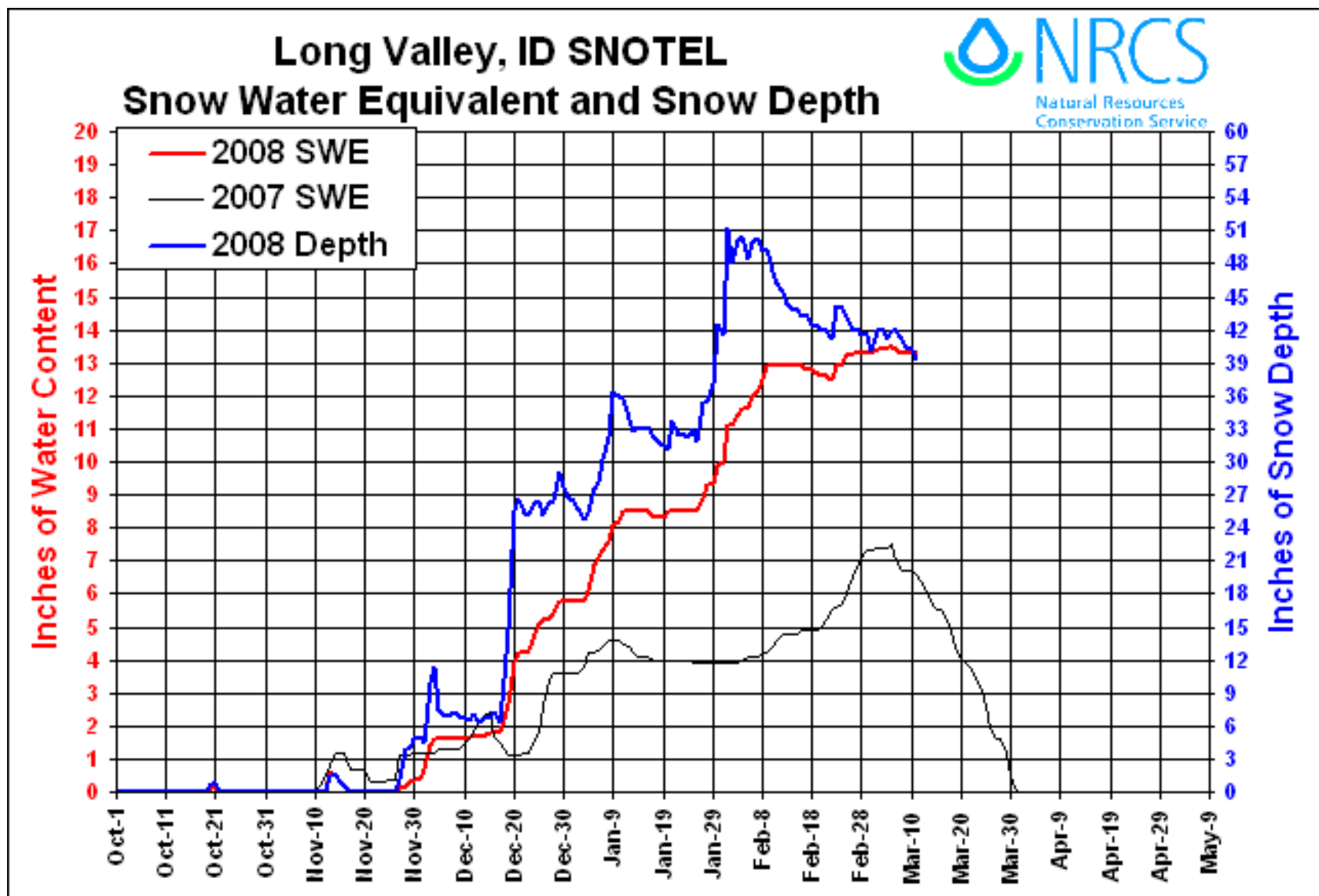
Weiser – Payette – Boise



Weiser Basin Low Elevation Snow Courses



Long Valley, elevation 4890, installed 2001



Previous max SWE 11.2" 3/25/2002

Today, 3/11/2008 SWE = 13.3"

Summary

Future precipitation and temperatures will determine how the low, mid and high elevation snowpack melts.

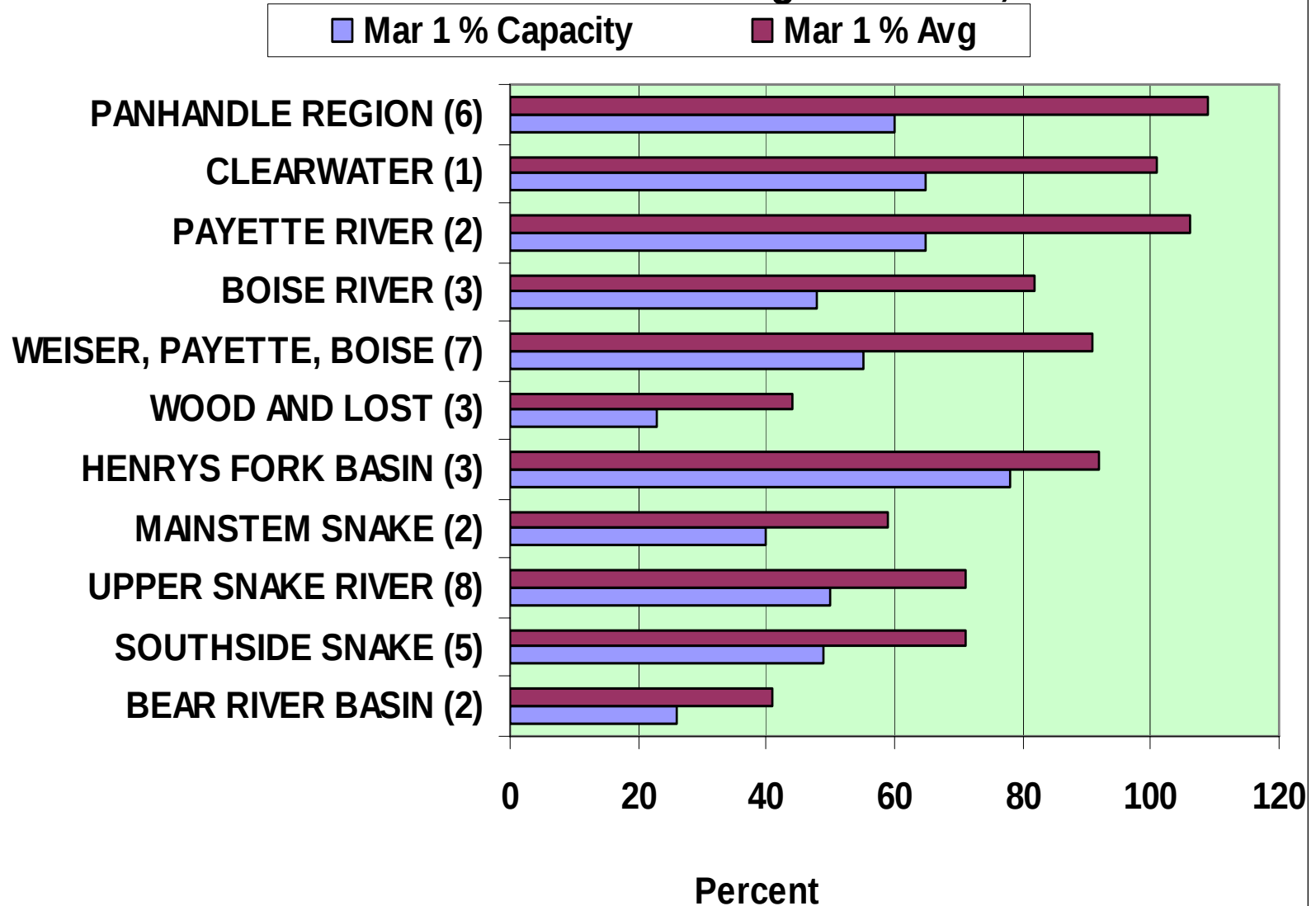
With rain on snow event – potential is there to melt snow rapidly producing streamflow, impacts from ice.

February is when low snow can/should start melting.

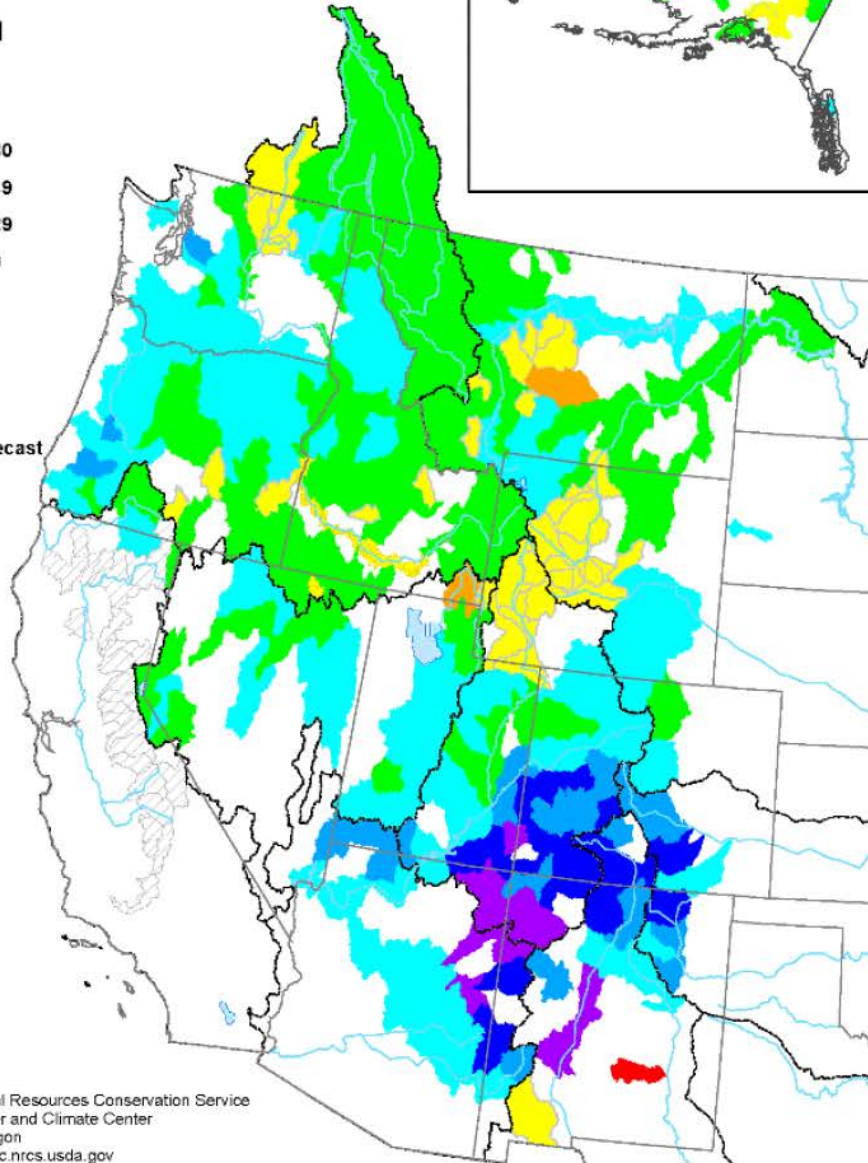
High snow is NOT present like other big snow years. The high elevation snow sustains streamflows for longer period when it melts in spring, thus extended high flows.

Low elevation snow melt with rain event produces sharp increases in streamflow and usually decreases fairly quickly after the event or return of cold weather.

Idaho Basin Reservoir Storage March 1, 2008



Spring and Summer Streamflow Forecasts as of March 1, 2008



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

Change in Spring and Summer Streamflow Forecasts from February 1 to March 1, 2007

Legend

Percent

> 30

16 to 30

6 to 15

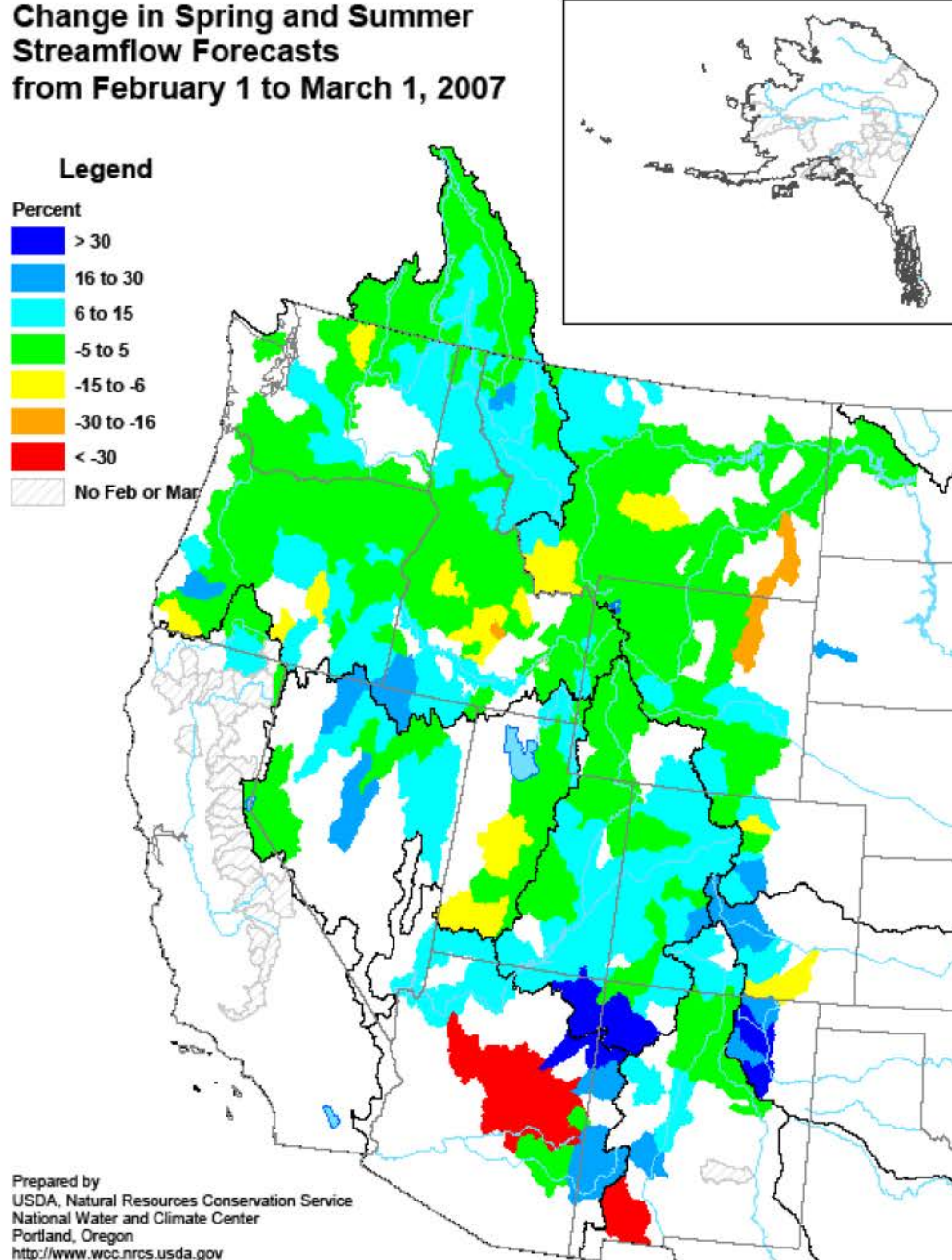
-5 to 5

-15 to -6

-30 to -16

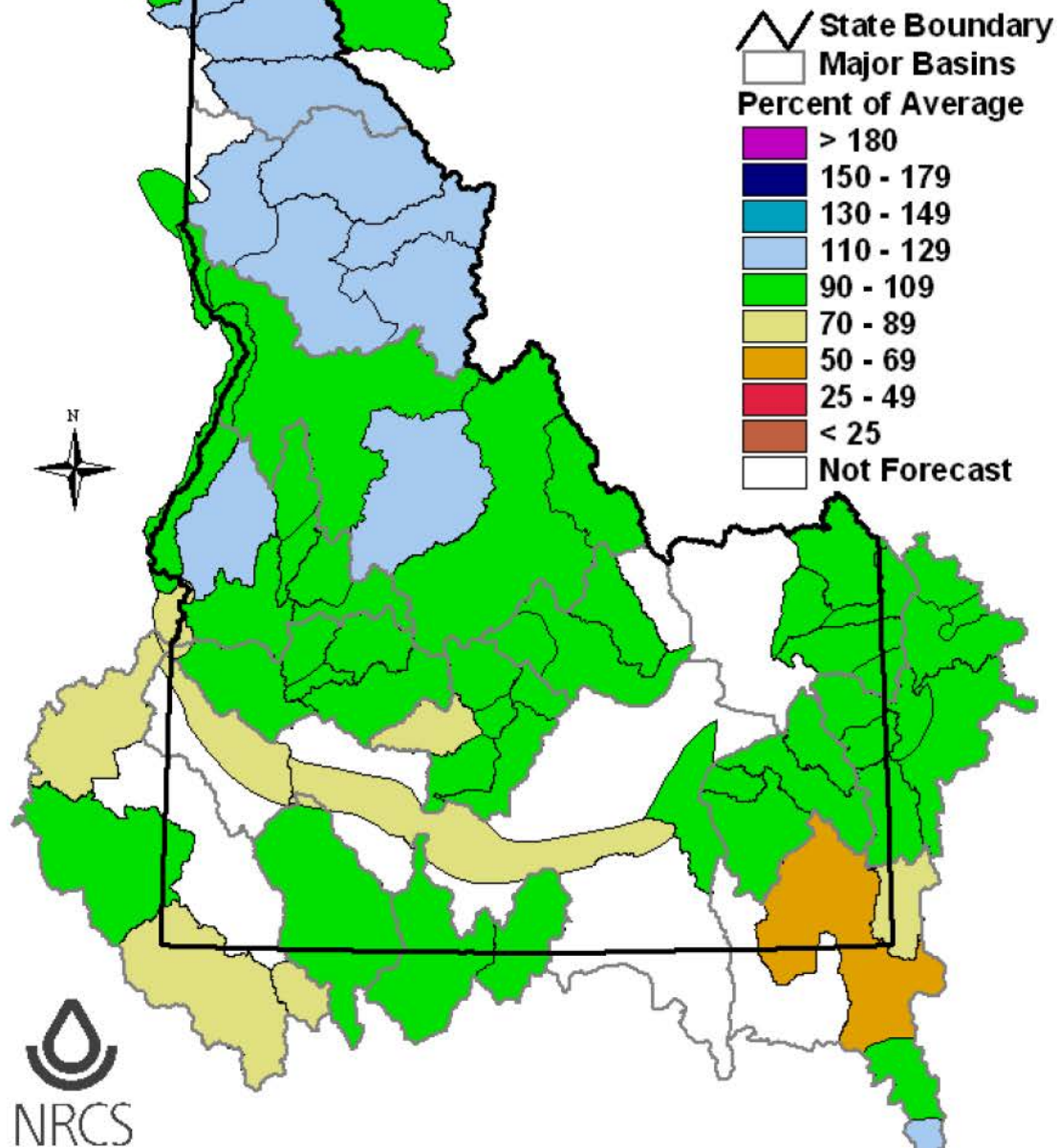
< -30

No Feb or Mar



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

March 1, 2008
50% Exceedance
Summer Streamflow Forecast
Idaho

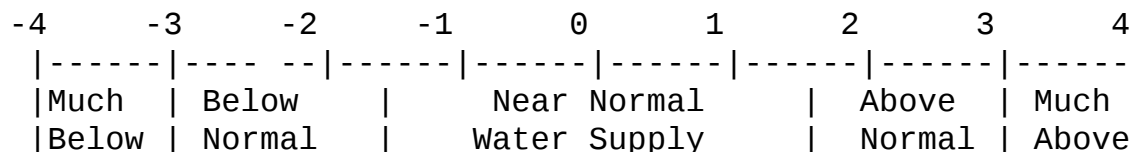


Selected March 1, 2008 NRCS Forecasts

Forecast Point	Period	50% exceedance forecast KAF	% Avg	30-yr Avg KAF
Spokane near Post Falls	APR-JUL	2800	110	2550
Dworshak Reservoir Inflow	APR-JUL	2920	111	2640
Salmon R at White Bird	APR-JUL	6150	105	5850
Weiser R nr Weiser	MAR-JUL	680	123	555
Payette R nr Horseshoe Bend	APR-JUL	1760	107	1640
Boise R nr Boise	APR-JUL	1400	99	1410
Big Wood R bl Magic Dam	APR-JUL	290	100	290
Big Lost R bl Mackay Res	APR-JUL	140	99	141
Henrys Fork nr Rexburg	APR-JUL	1530	98	1560
Snake R nr Heise	APR-JUL	3560	100	3560
Salmon Falls Ck nr San Jacinto	MAR-JUN	83	93	89
Owyhee R nr Rome	MAR-JUL	550	95	580

Idaho March 1, 2008 Surface Water Supply Index

BASIN	March 2008 SWSI SWSI Value	Agricultural Water Supply Shortage May Occur When SWSI is Less Than	Most Recent Year With Similar SWSI Value
PANHANDLE	1.1	NA	2000
CLEARWATER	2.3	NA	2002
SALMON	1.2	NA	2006
WEISER	1.0	NA	1997
PAYETTE	1.2	NA	1998
BOISE	0.3	-1.7	2000
BIG WOOD	-0.1	-0.5	2000
LITTLE WOOD	0.3	-2.0	2005
BIG LOST	-0.1	-0.1	1993/1985
LITTLE LOST	-0.1	0.4	1990/2005
HENRYS FORK	0.5	-3.3	2006
SNAKE (HEISE)	0.3	-1.6	2006
OAKLEY	-0.3	-1.2	2007
SALMON FALLS	-1.0	-1.6	2007
BRUNEAU	-0.8	NA	2004
BEAR RIVER	-1.8	-3.3	2002

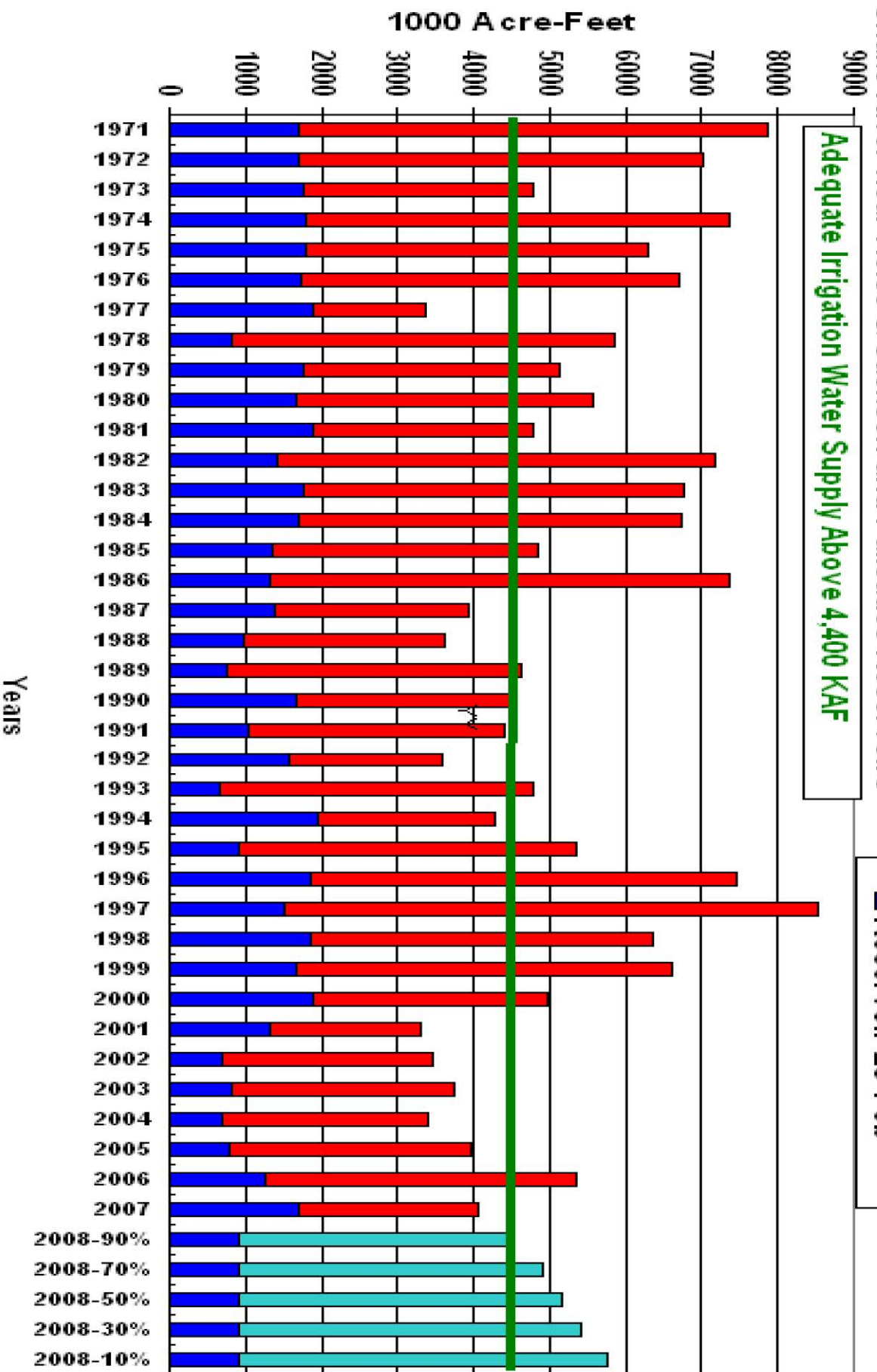


March 1 Surface Water Supply Index (SWSI)

Snake River near Heise & Jackson and Palisades Reservoirs

Adequate Irrigation Water Supply Above 4,400 KAF

■ Streamflow Apr-Sep
■ Reservoir 28-Feb



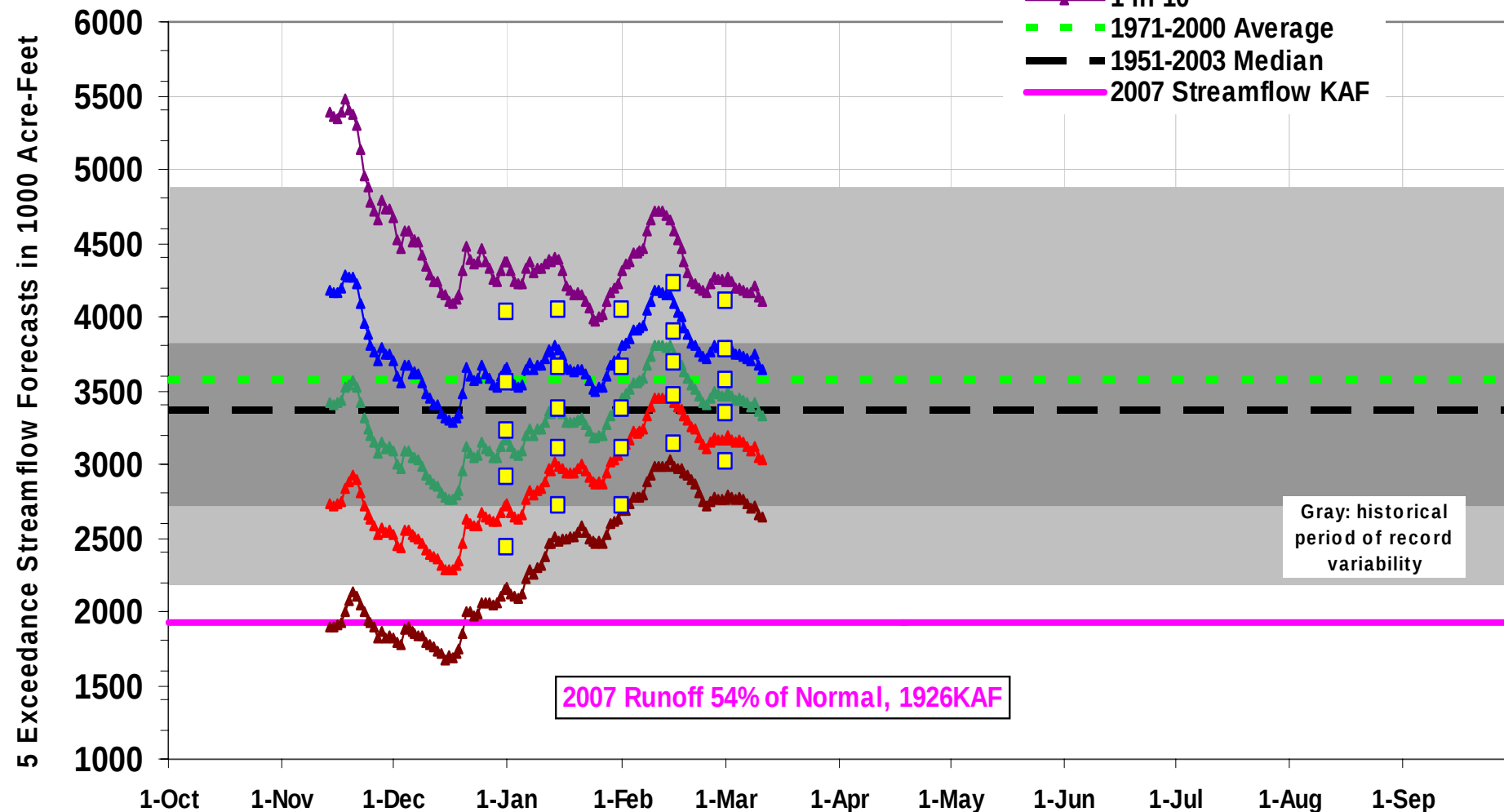
Snake near Heise Daily Forecast Model using daily SNOTEL data.

2008 Snake River near Heise: Apr - Jul Volume
NRCS Monthly / mid-Monthly Forecasts are Squares

Updated
March 12, 2008



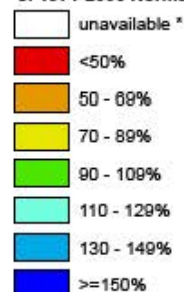
- 9 in 10
- 7 in 10
- 5 in 10
- 3 in 10
- 1 in 10
- 1971-2000 Average
- 1951-2003 Median
- 2007 Streamflow KAF



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

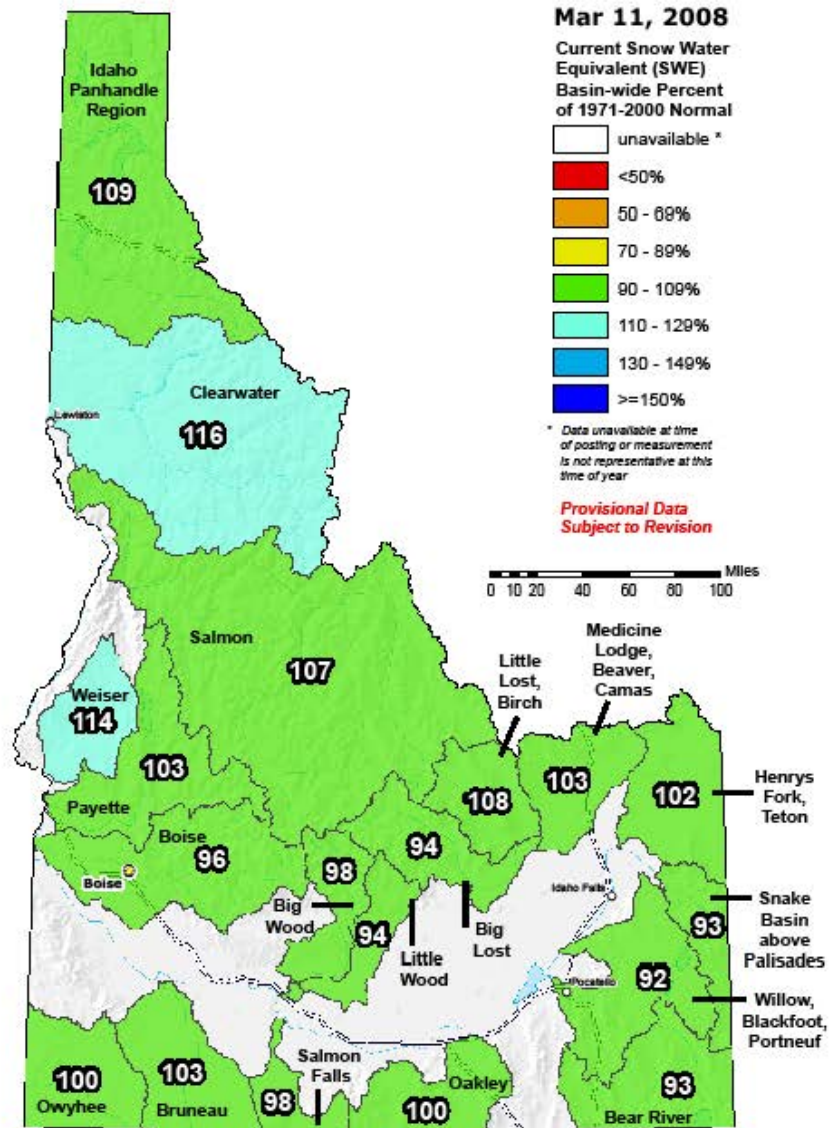
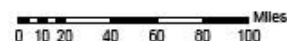
Mar 11, 2008

Current Snow Water
Equivalent (SWE)
Basin-wide Percent
of 1971-2000 Normal



* Data unavailable at time
of posting or measurement
is not representative at this
time of year

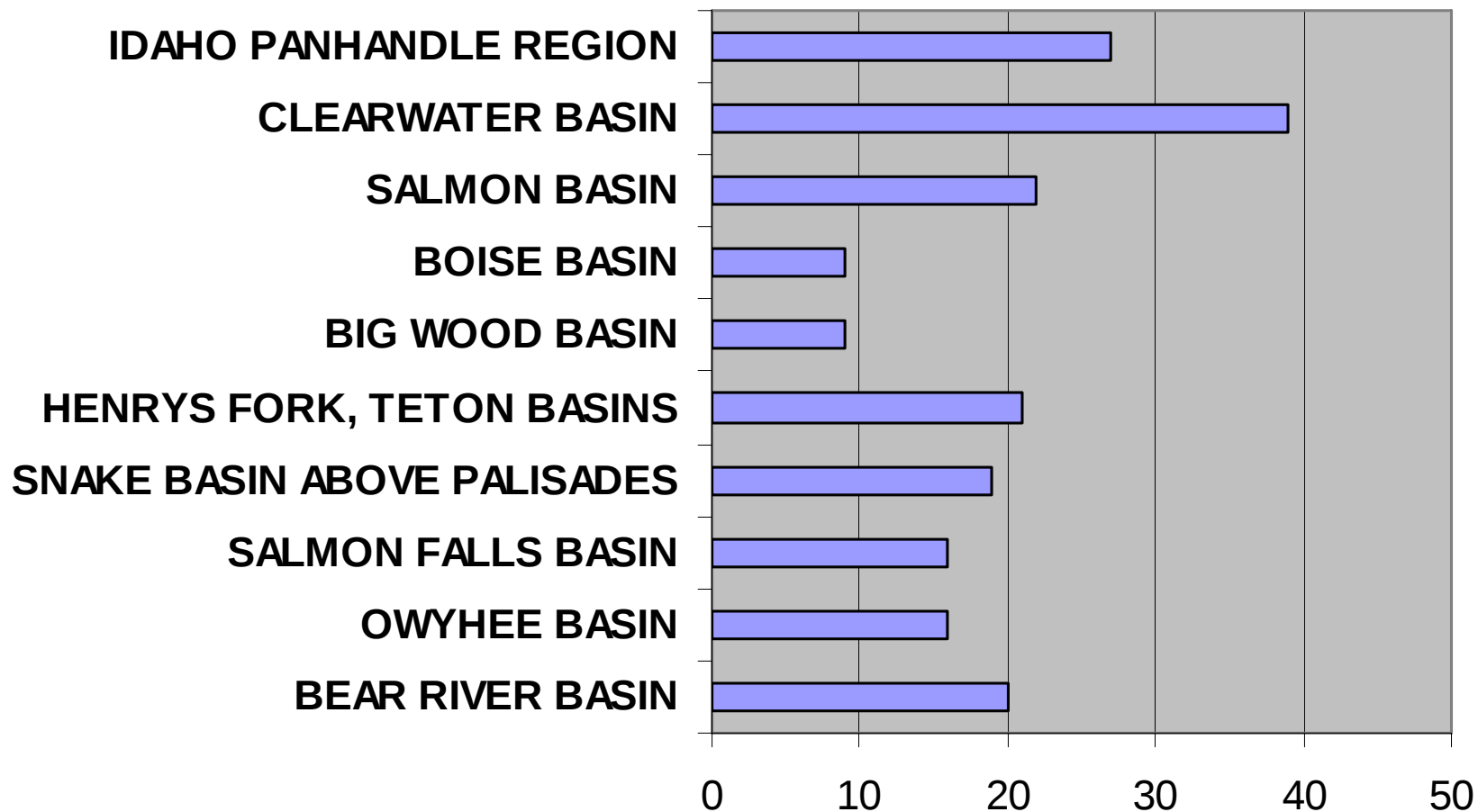
Provisional Data
Subject to Revision



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: Tom.Pagano@por.usda.gov 503 414 3010

SNOTEL March 11, 2008 Precipitation as Percent of Average March Total Precipitation





Idaho Water Supply and Spring Flood Potential Briefing

IDWR Briefing, March 12th, 2008

Jay Breidenbach, NOAA National Weather Service

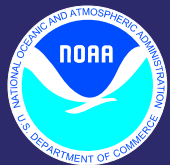
Snow Accumulation and Melt

Three Month Climate Outlook

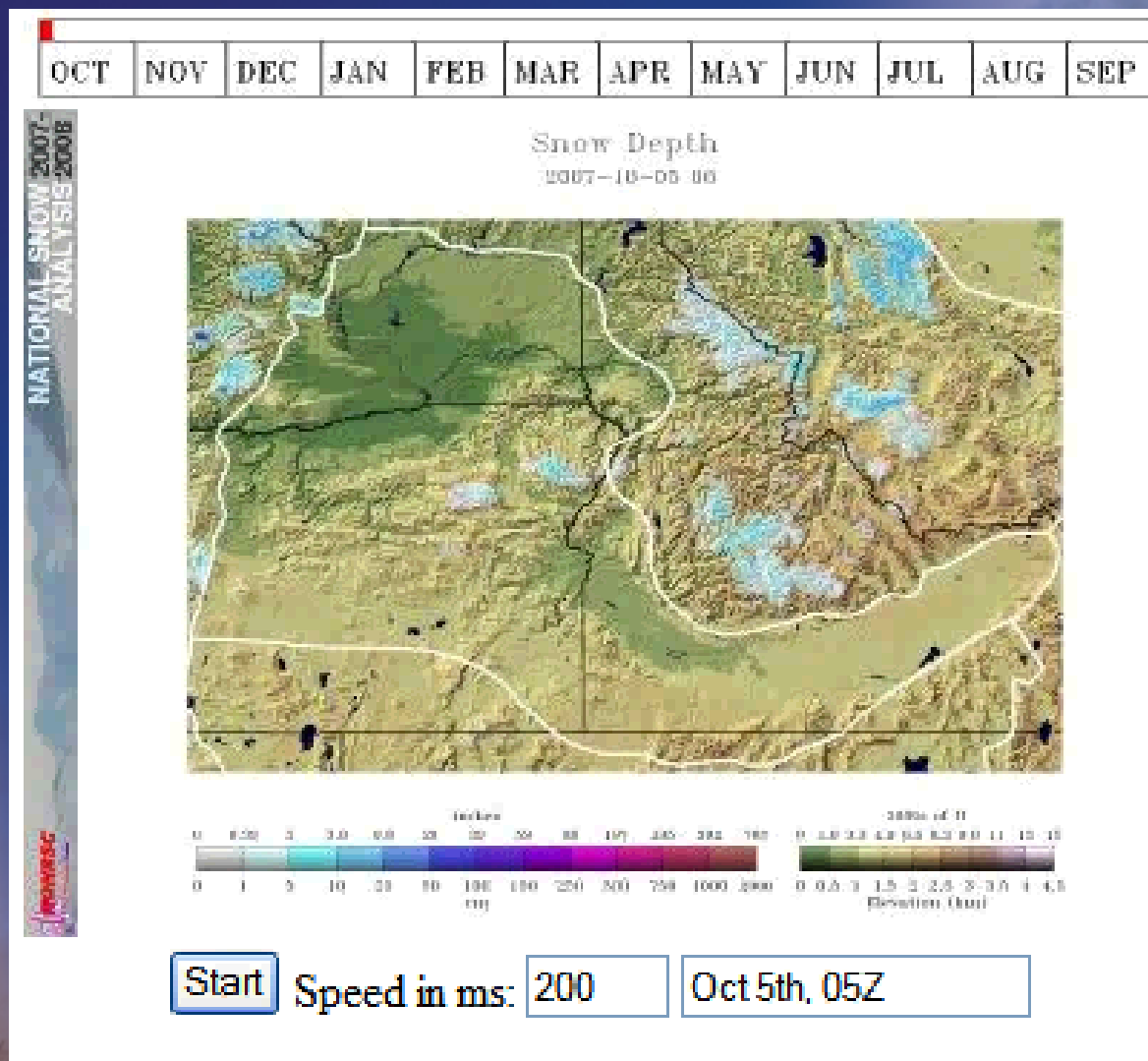
Forecast for next 10 days

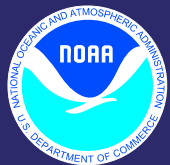
Spring Flood Potential

Western Water Supply Web Page



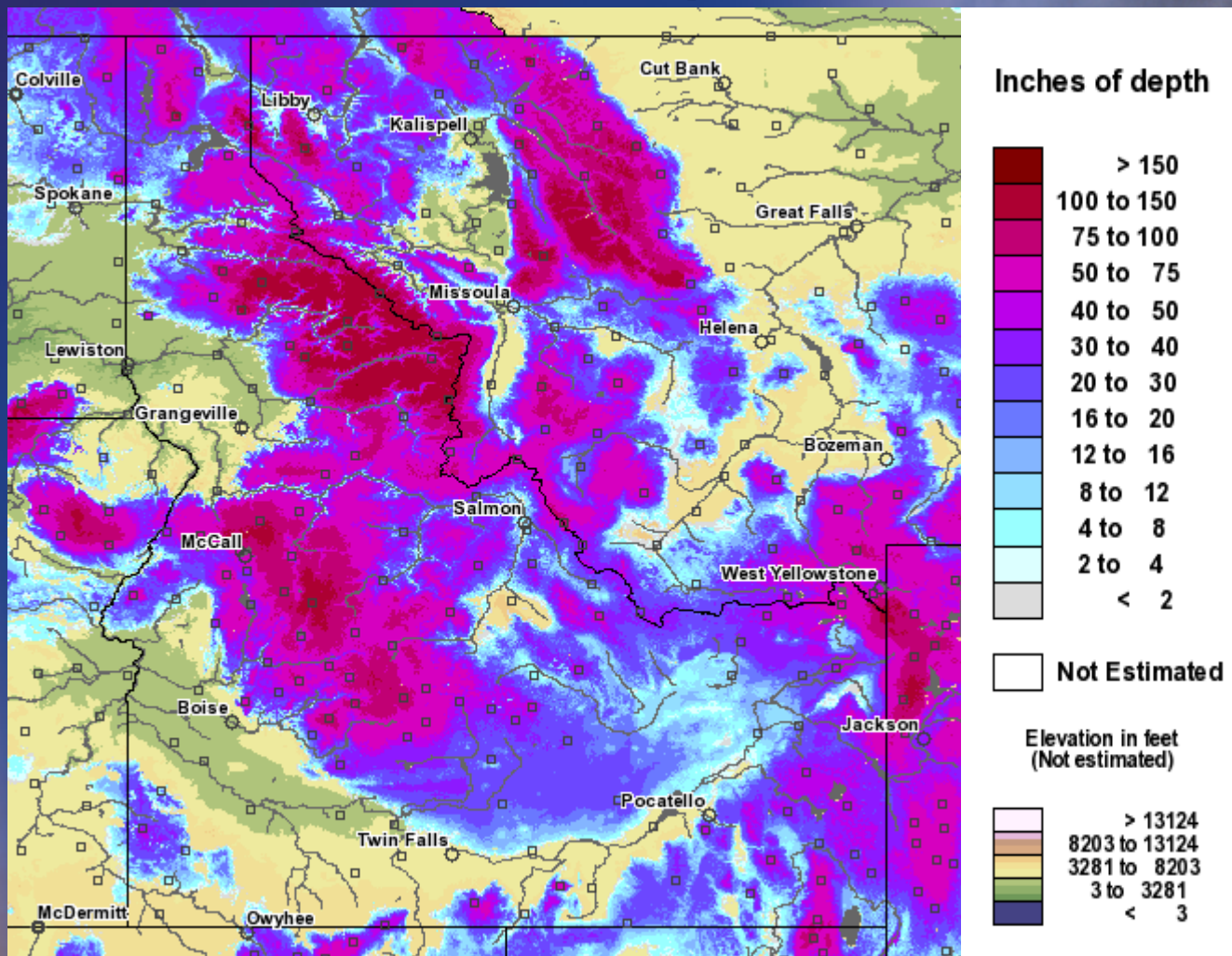
2008 Water Year Snow Movie NOAA/NORSC

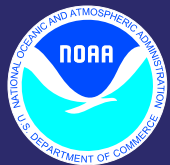




Snow Depth

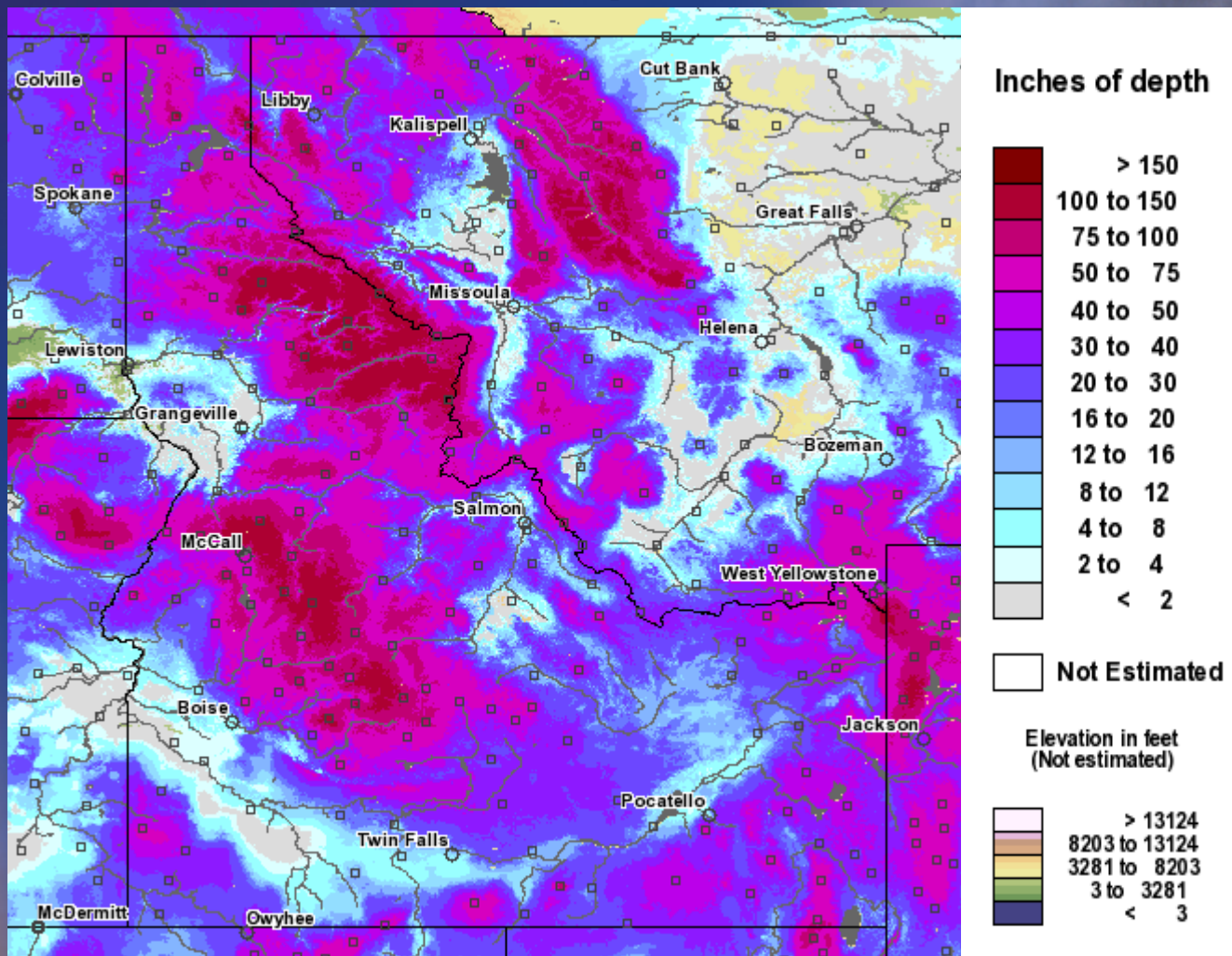
March 11th, 2008





Snow Depth

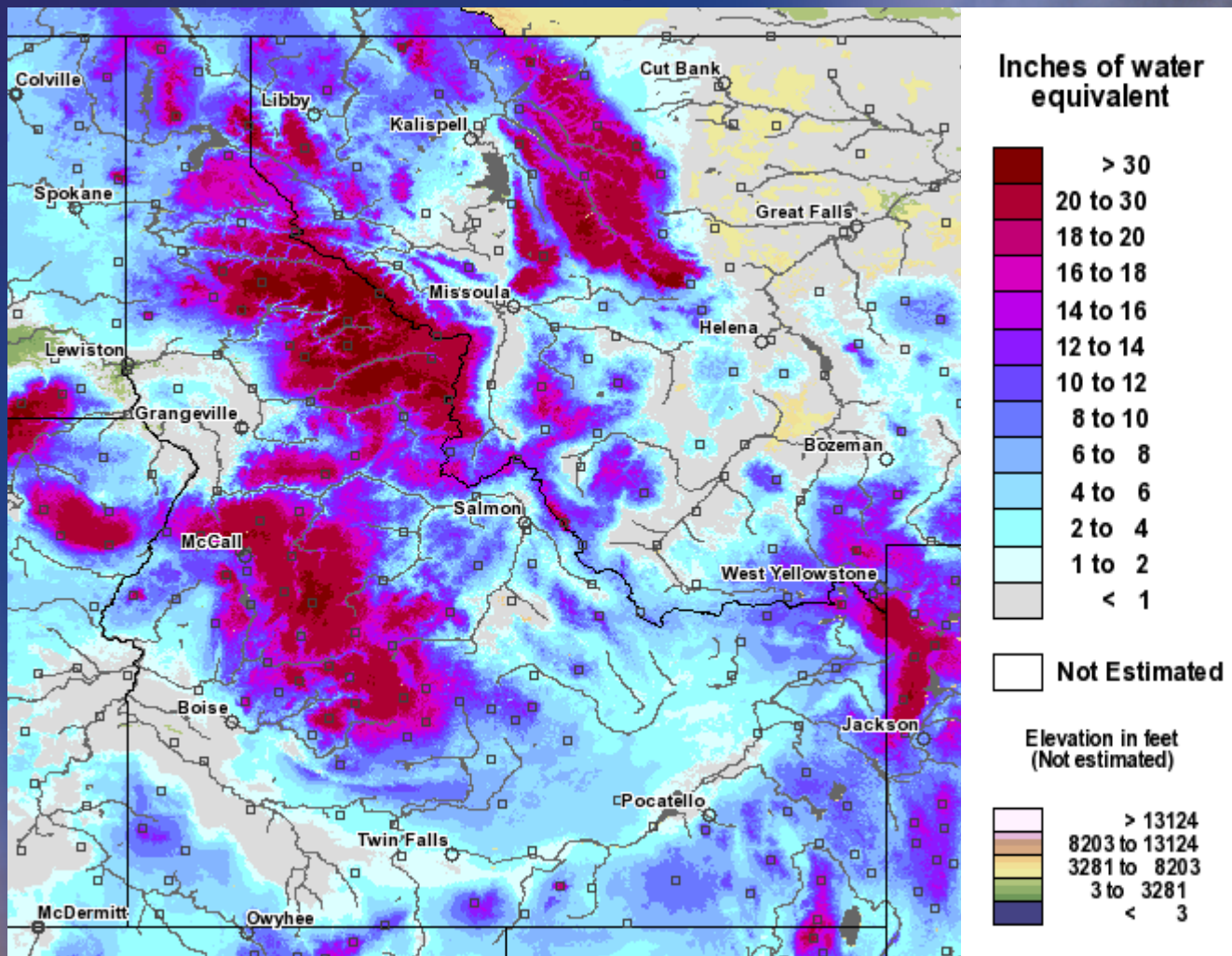
Feb 6th, 2008

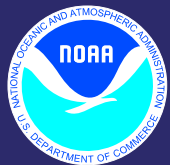




Snow Water Equivalent

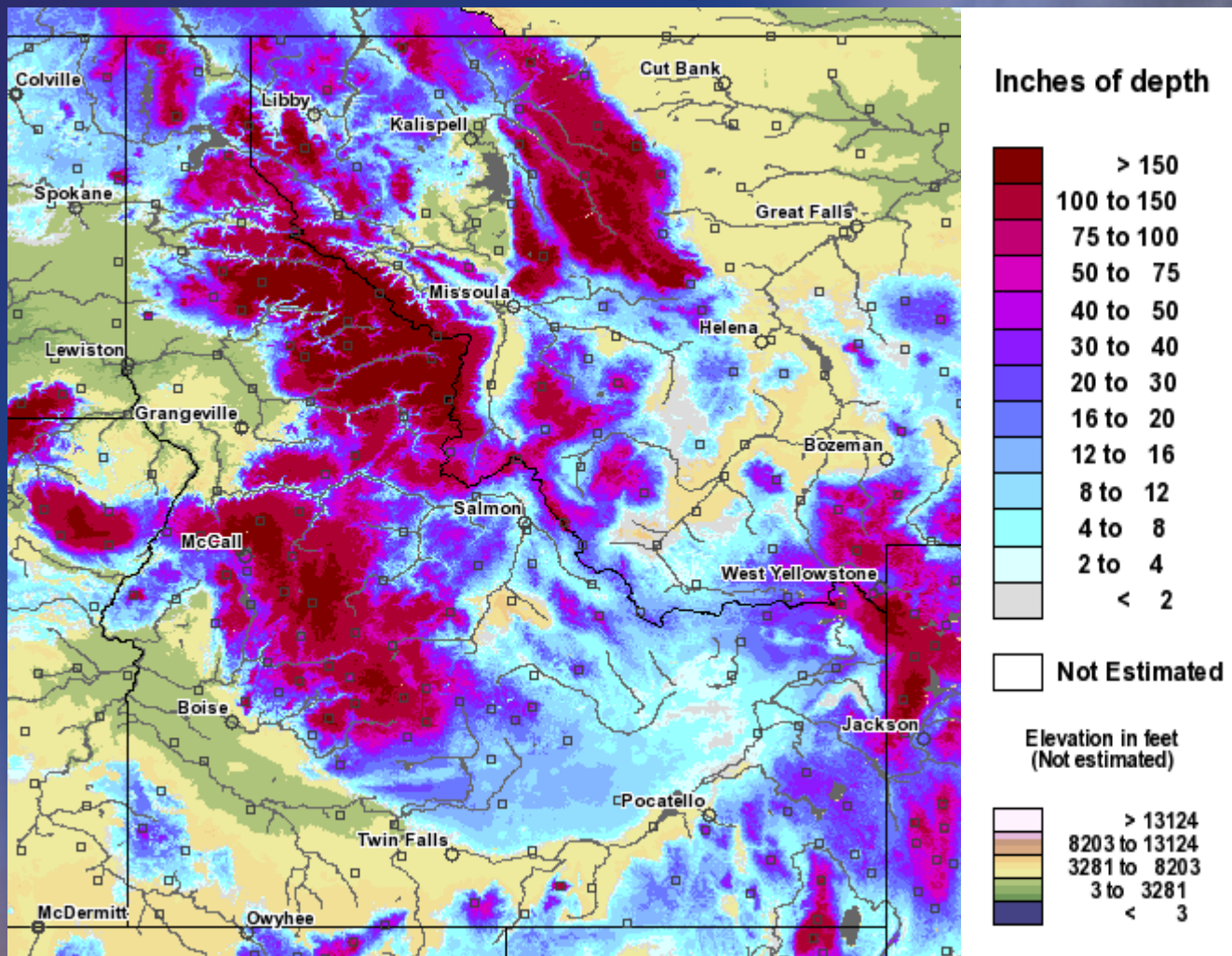
Feb 6th, 2008

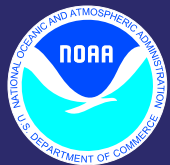




Snow Water Equivalent

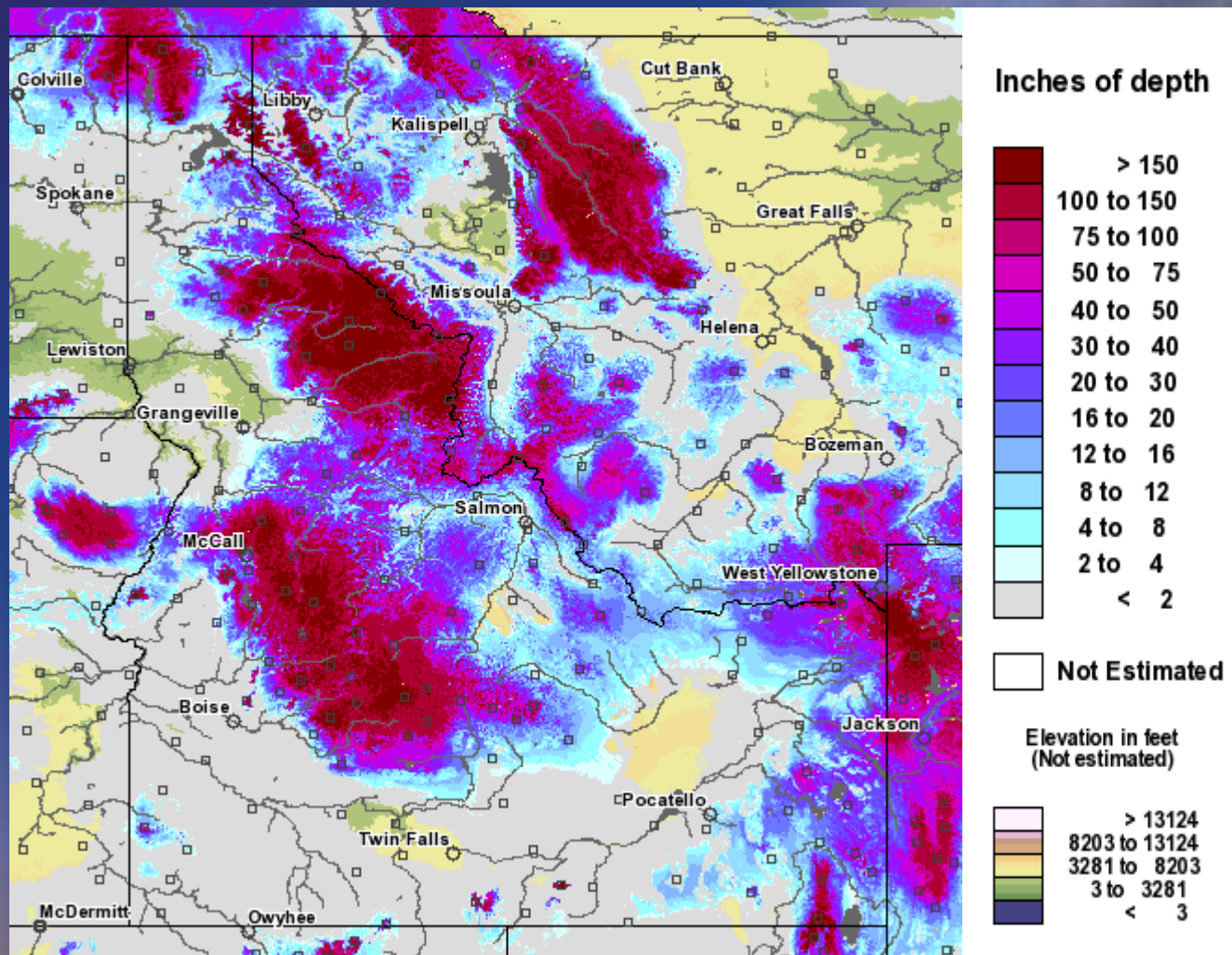
March 11th, 2008

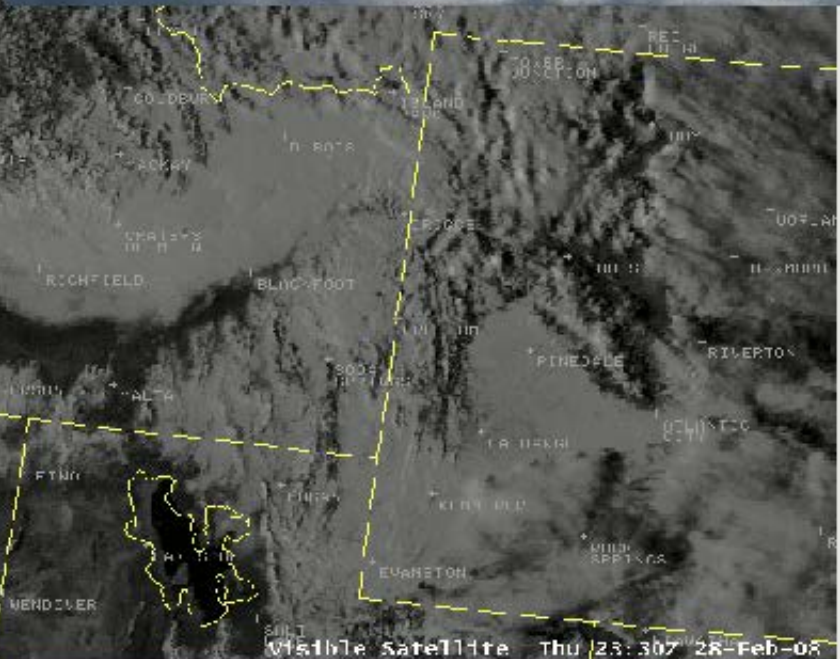
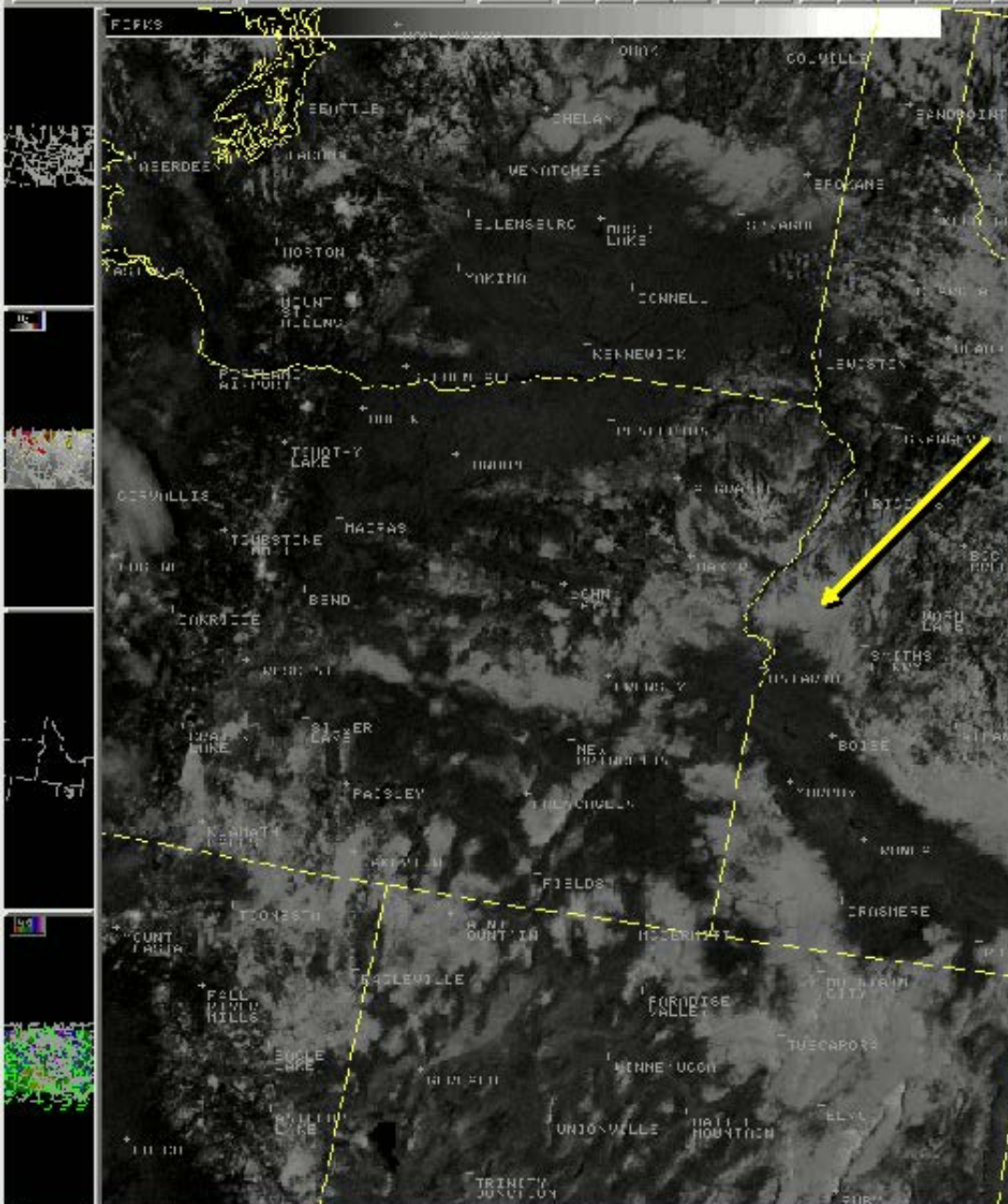




Snow Water Equivalent

March 11th, 2006

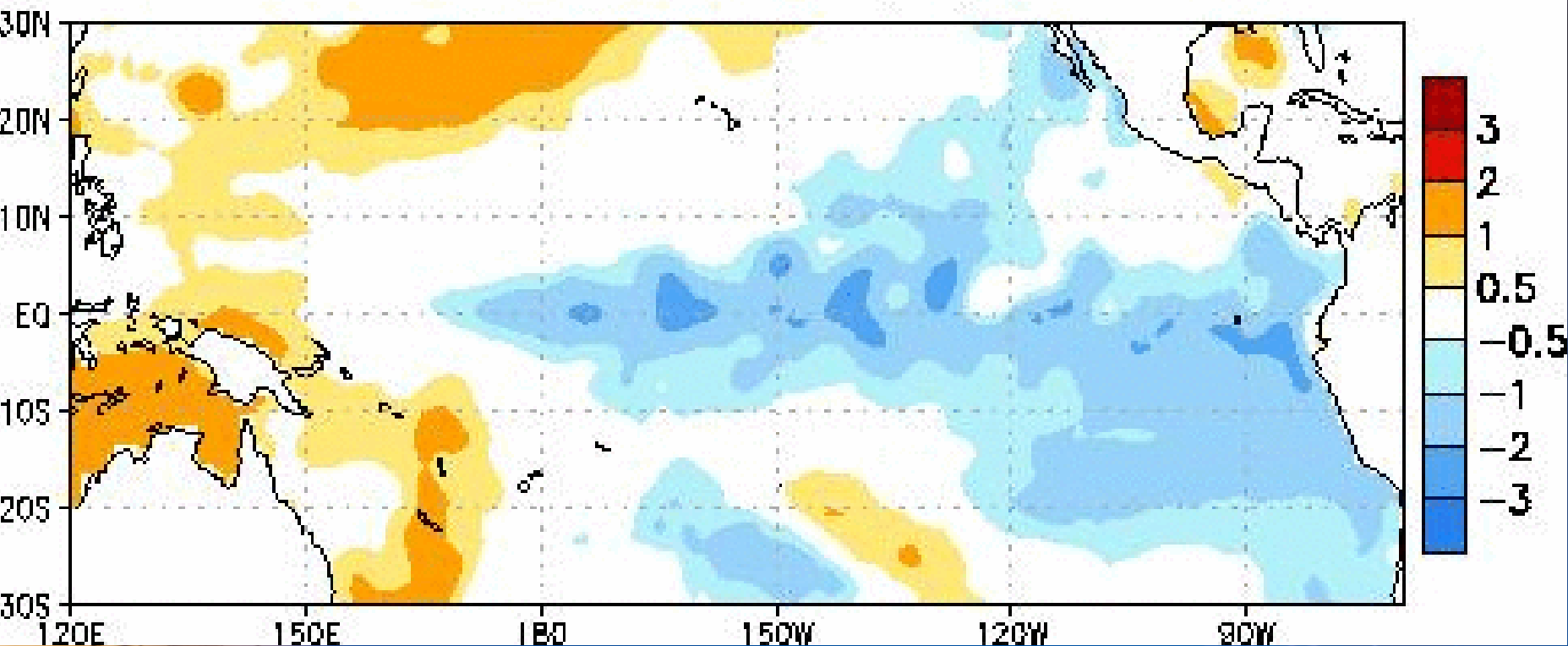






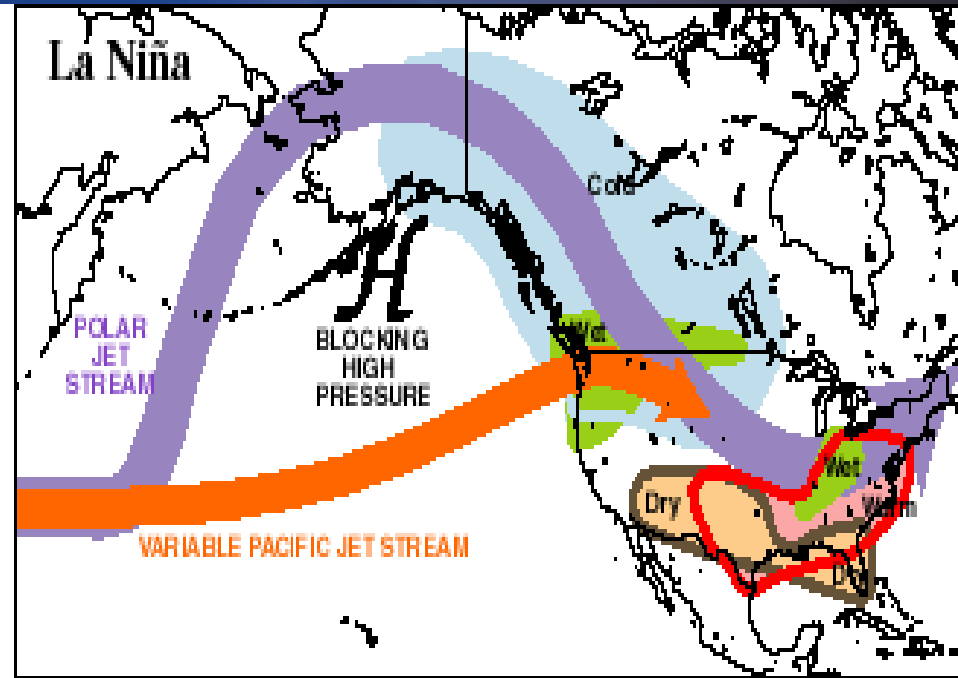
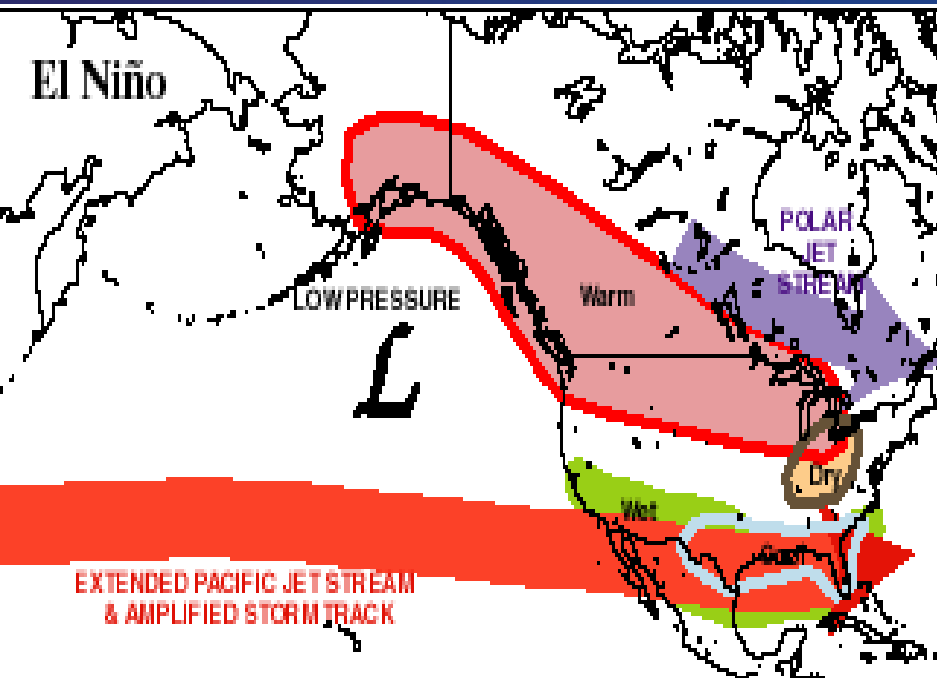
Equatorial Sea Surface Temperature Anomalies

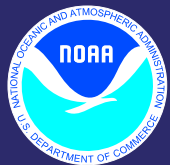
Week centered on 19 DEC 2007
SST Anomalies ($^{\circ}\text{C}$)



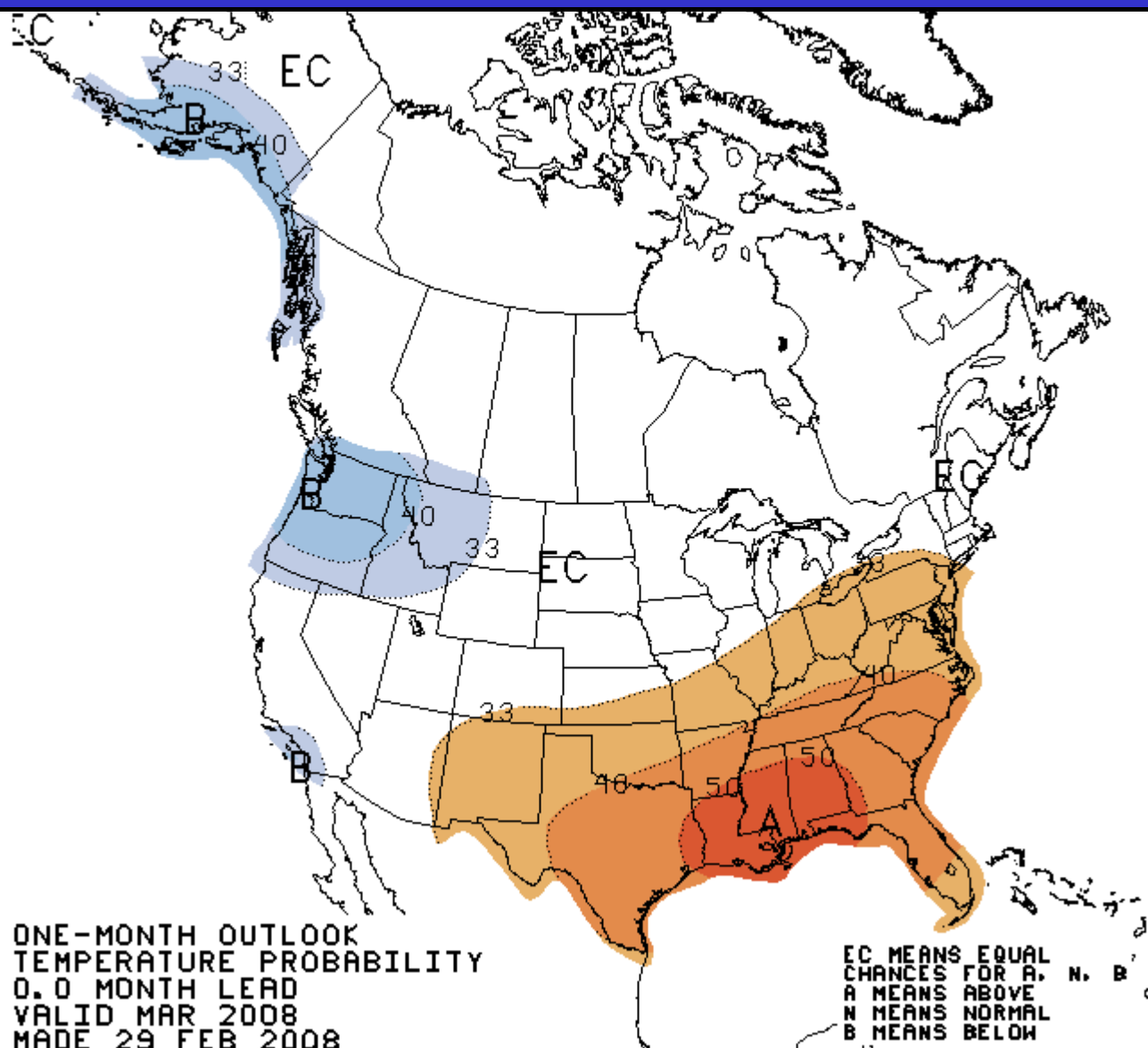


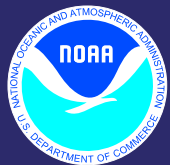
Typical North American Impacts of La Nina



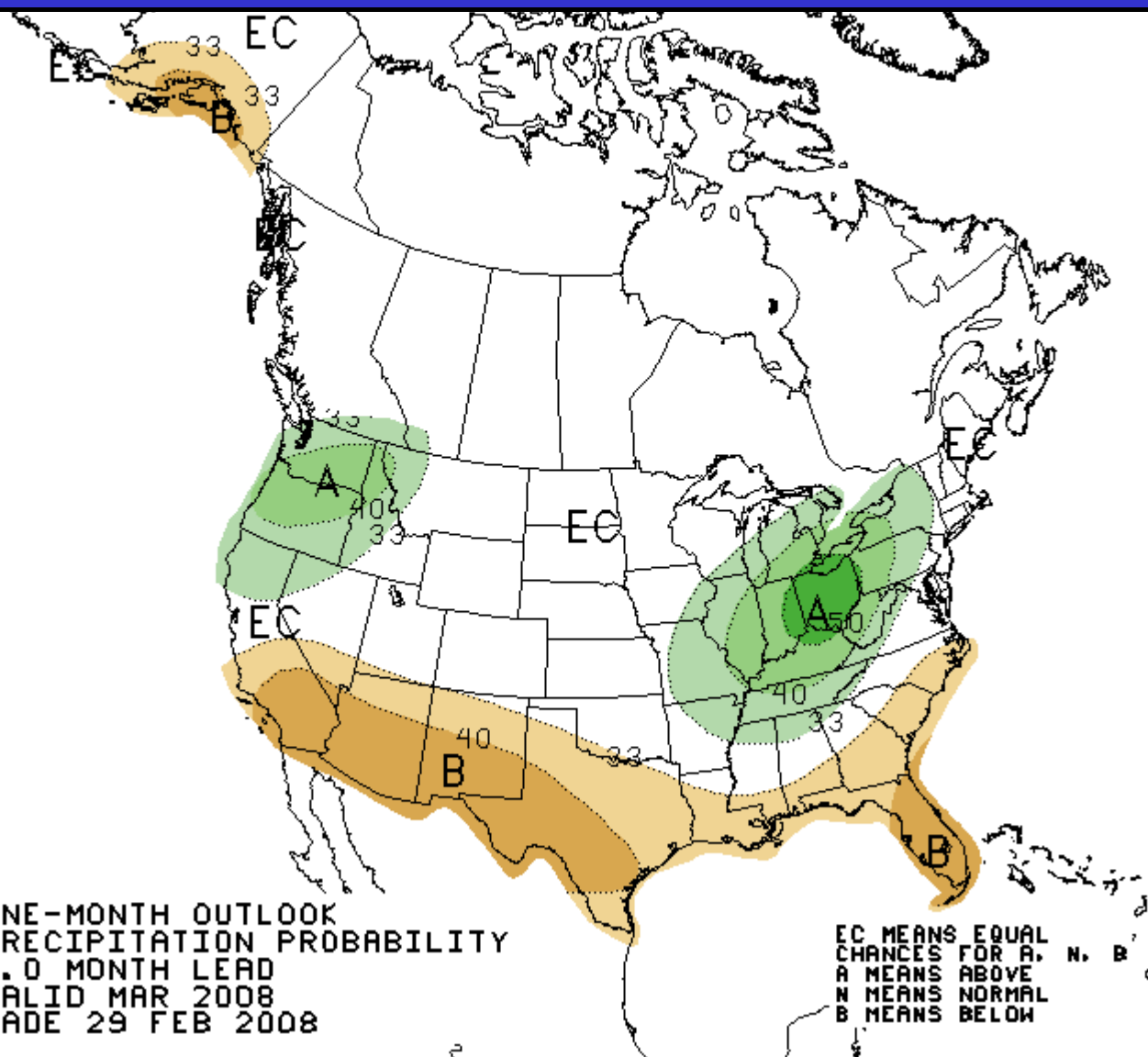


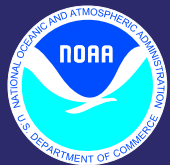
March Temperatures



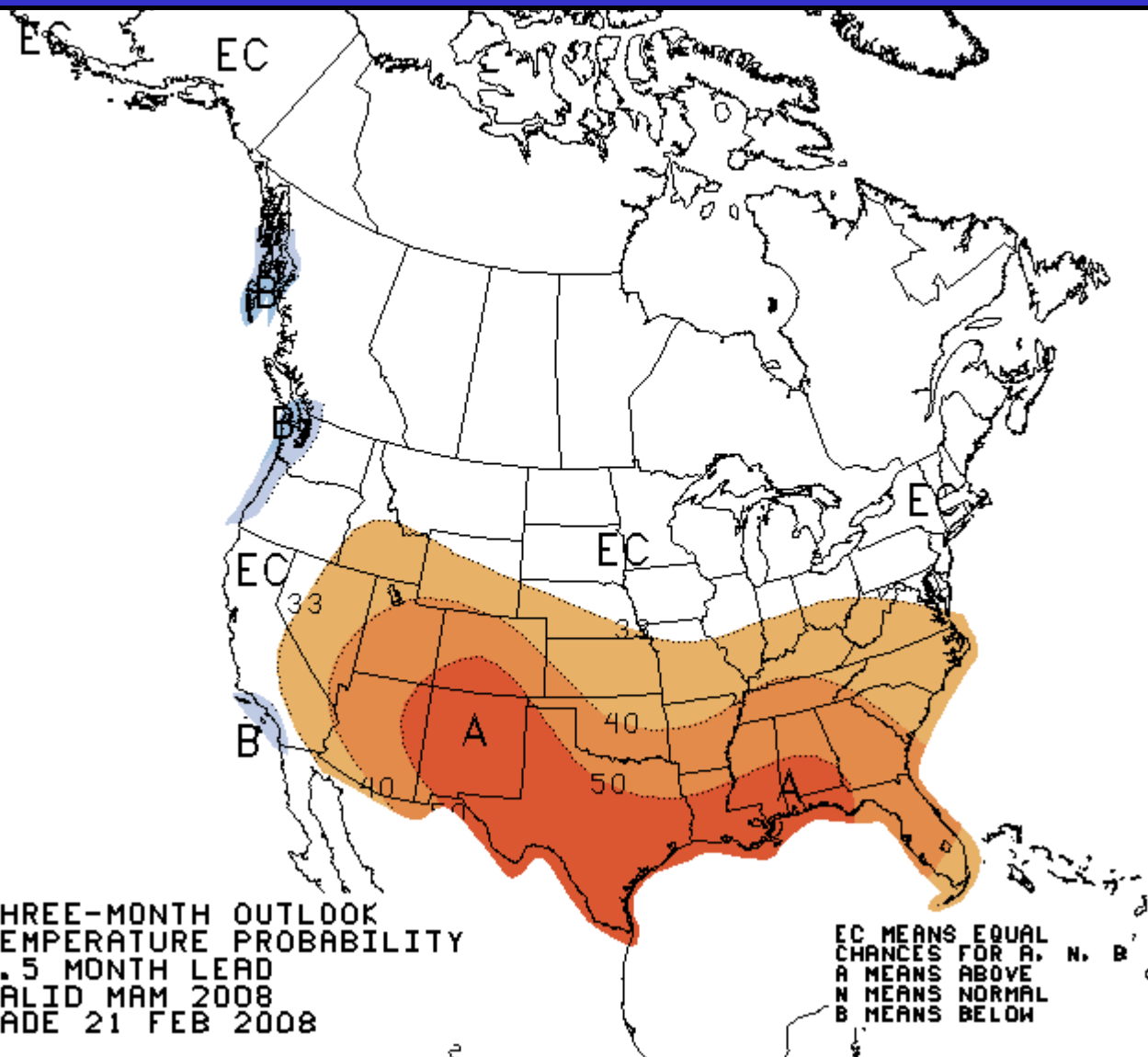


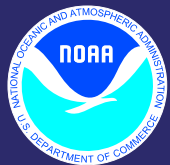
March Precipitation



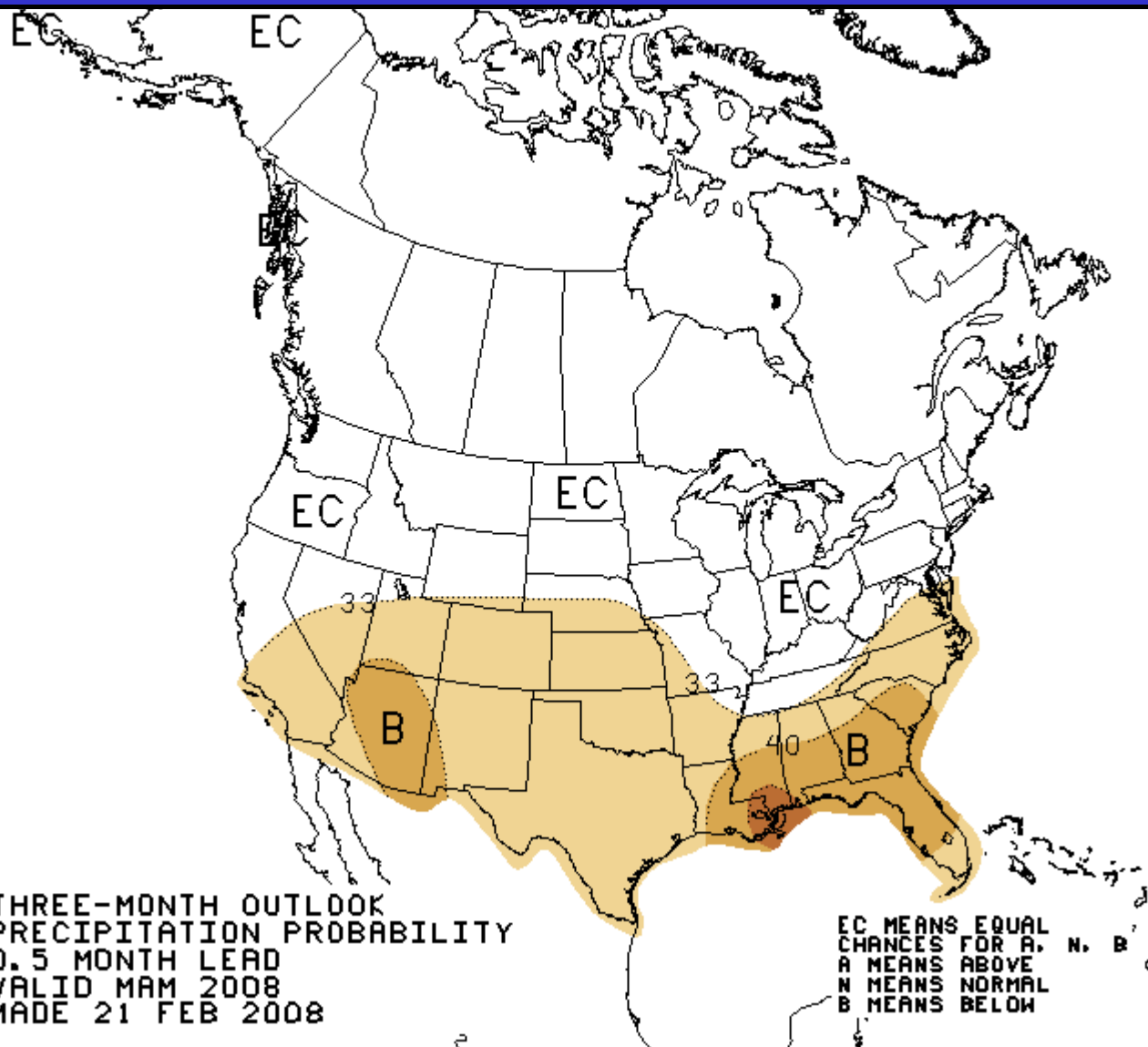


Three Month Outlook Temperatures





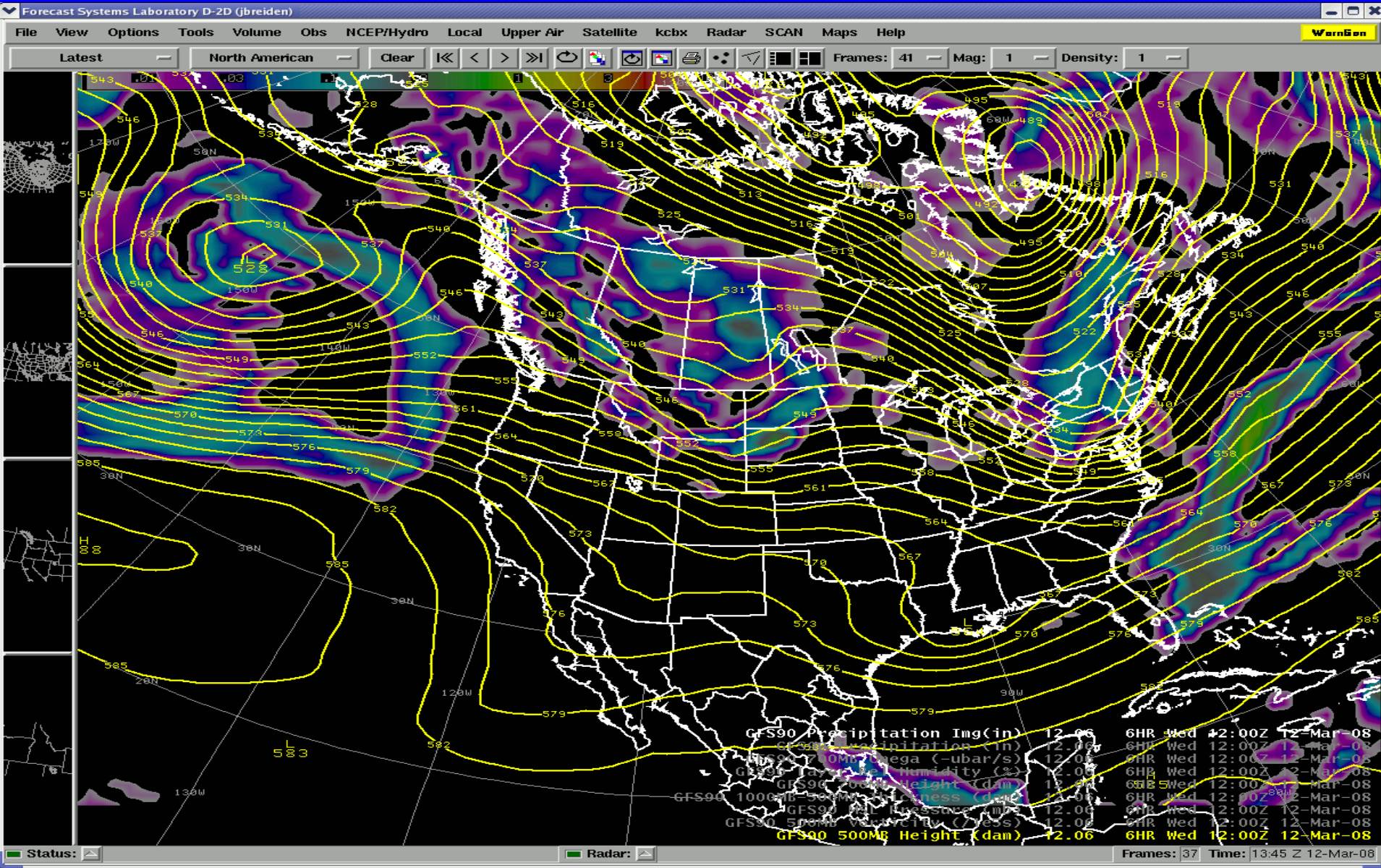
Three Month Outlook Precipitation



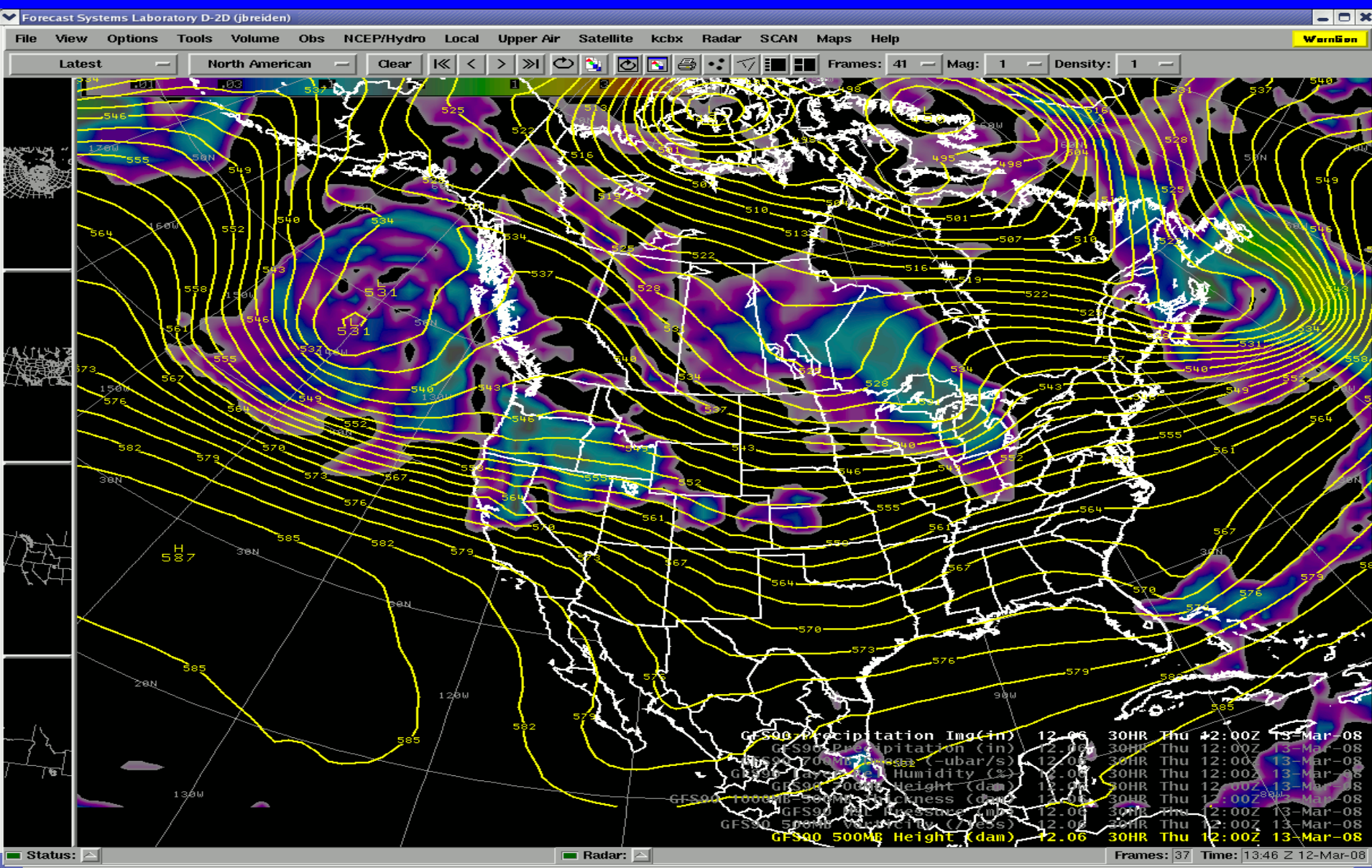
☒ Radar: 

Frames: 37 Time: 13:44 Z 12-Mar-08

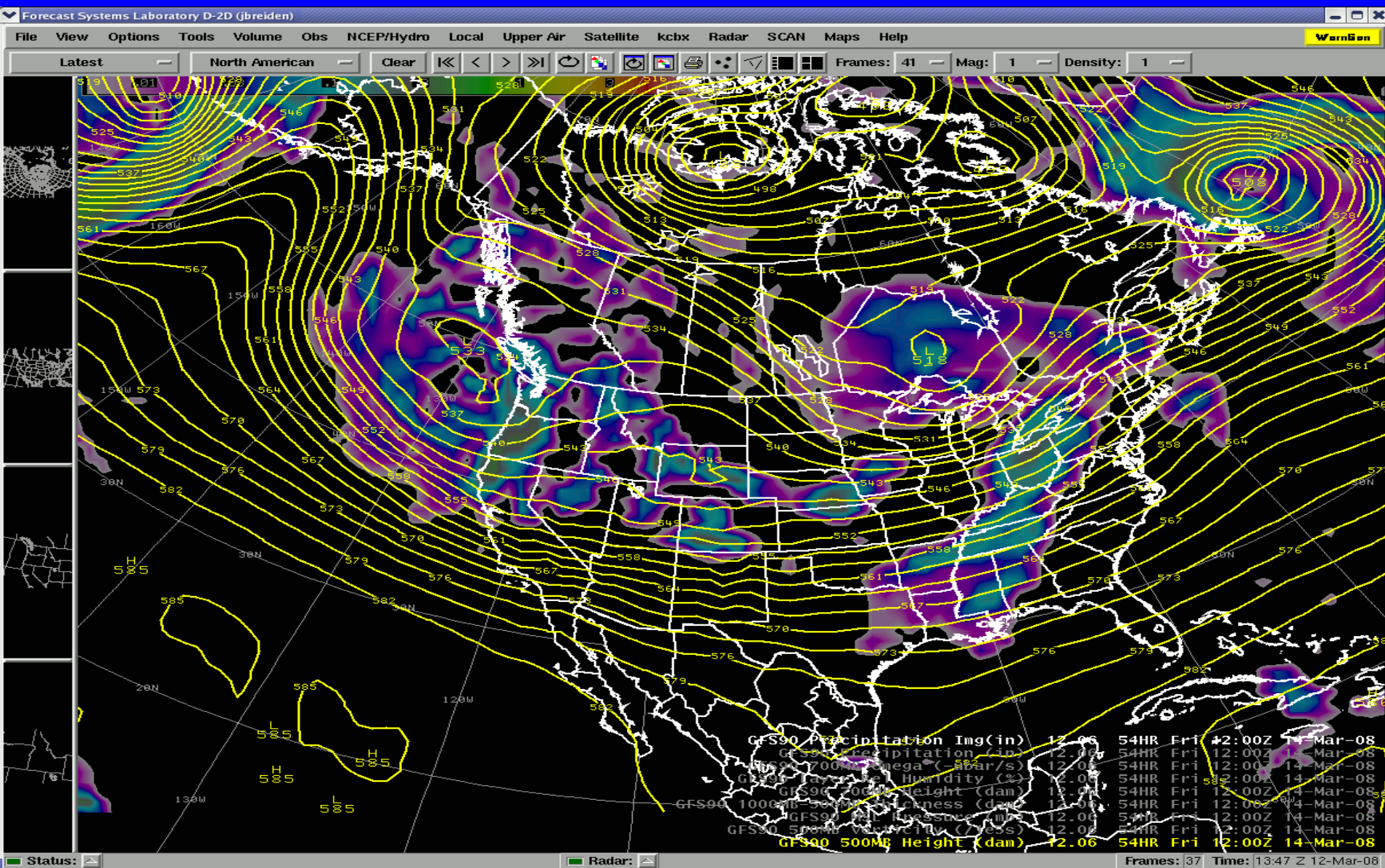
500 mb heights / model precipitation



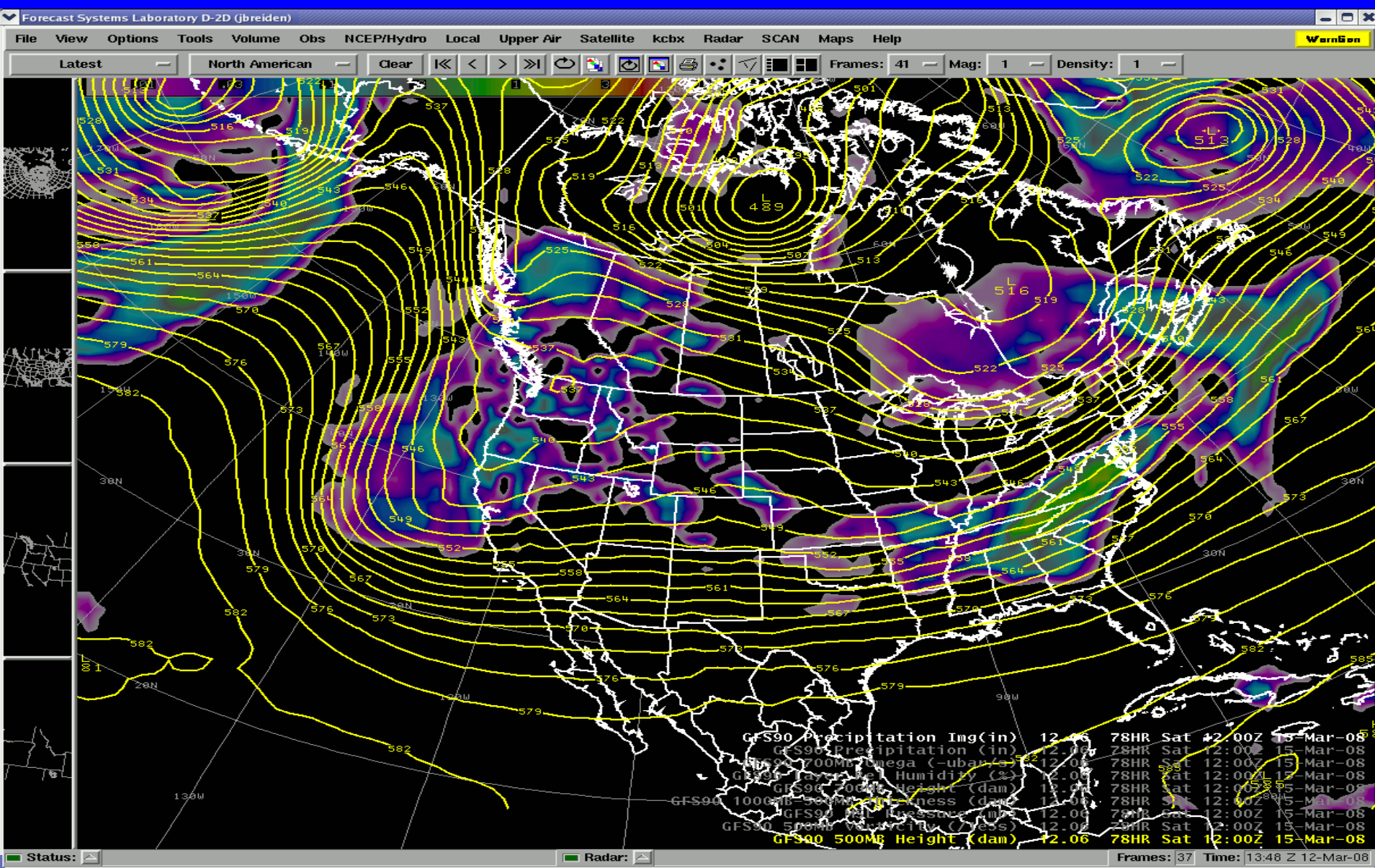
Thursday, Mar 13th Wet / Cool



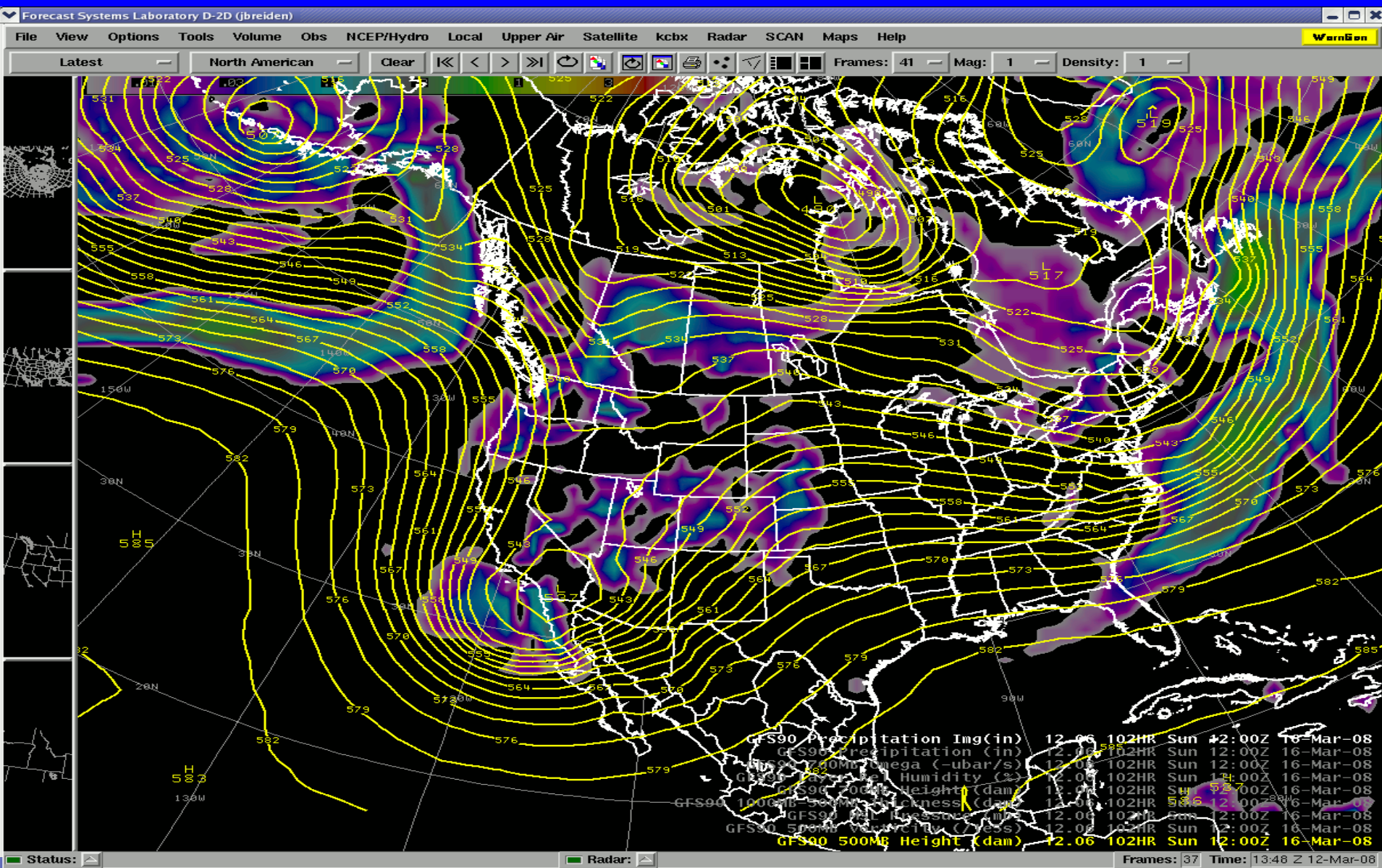
Friday, Mar 14th – Wet /Cool



Saturday, Mar 15th, Wet/Cool



Sunday , Mar 16th– Cold/ Dry Northwest Flow



Forecast Systems Laboratory D-2D (jbreiden)

File View Options Tools Volume Obs NCEP/Hydro Local Upper Air Satellite kcbx Radar SCAN Maps Help

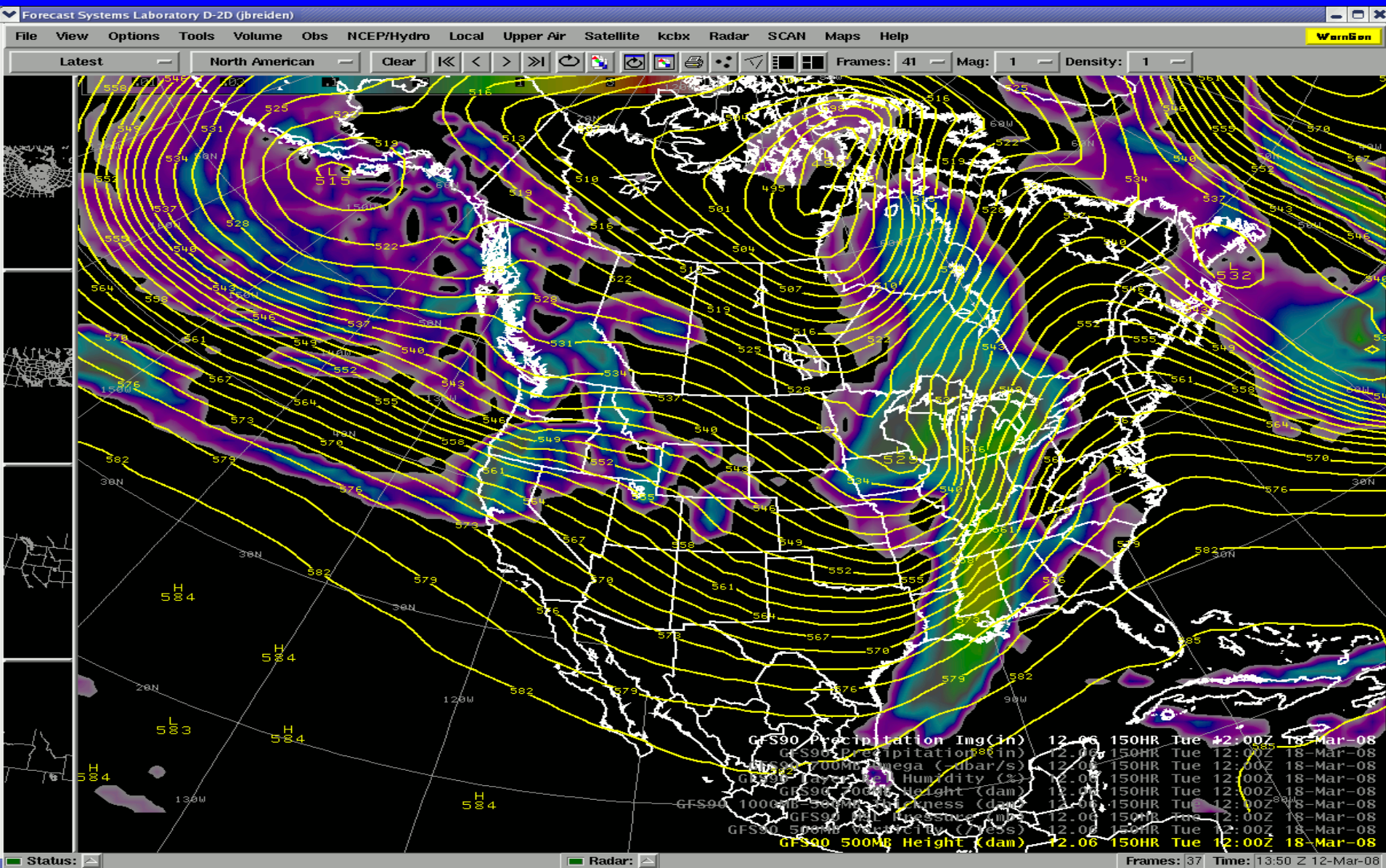
Latest North American Clear

Frames: 41 Mag: 1 Density: 1

GFS90 Precipitation Img(in) 12.06 120HR Mon 06:00Z 17-Mar-08
 GFS90 Precipitation (in) 12.06 120HR Mon 06:00Z 17-Mar-08
 GFS90 700MB Omega (-ubar/s) 12.06 120HR Mon 06:00Z 17-Mar-08
 GFS90 700MB Humidity (%) 12.06 120HR Mon 06:00Z 17-Mar-08
 GFS90 700MB Height (dam) 12.06 120HR Mon 06:00Z 17-Mar-08
 GFS90 1000MB Thickness (dam) 12.06 120HR Mon 06:00Z 17-Mar-08
 GFS90 500MB Height (dam) 12.06 120HR Mon 06:00Z 17-Mar-08

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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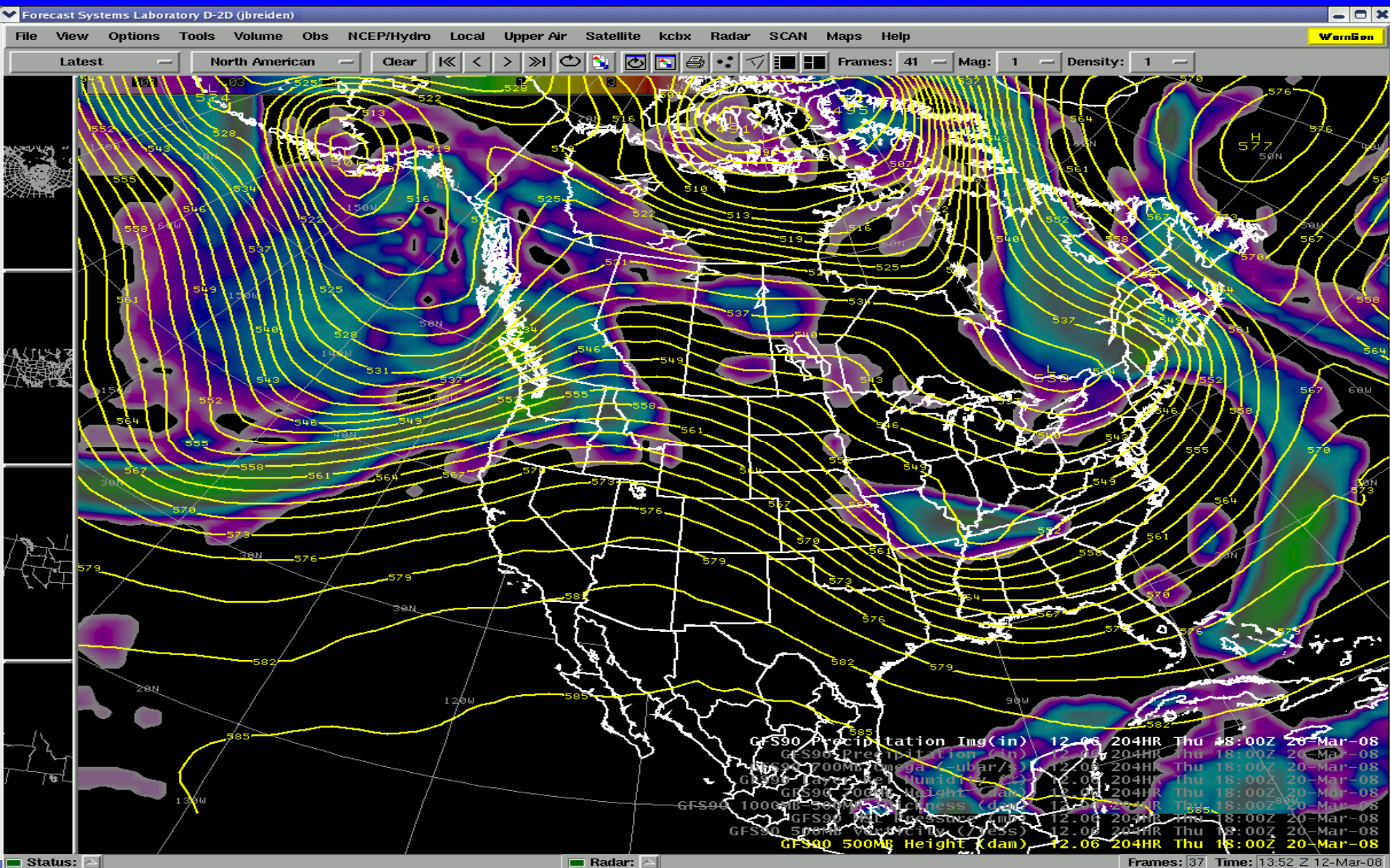
Tuesday, Mar 18th – Moist Zonal Flow



☒ Radar: ☐

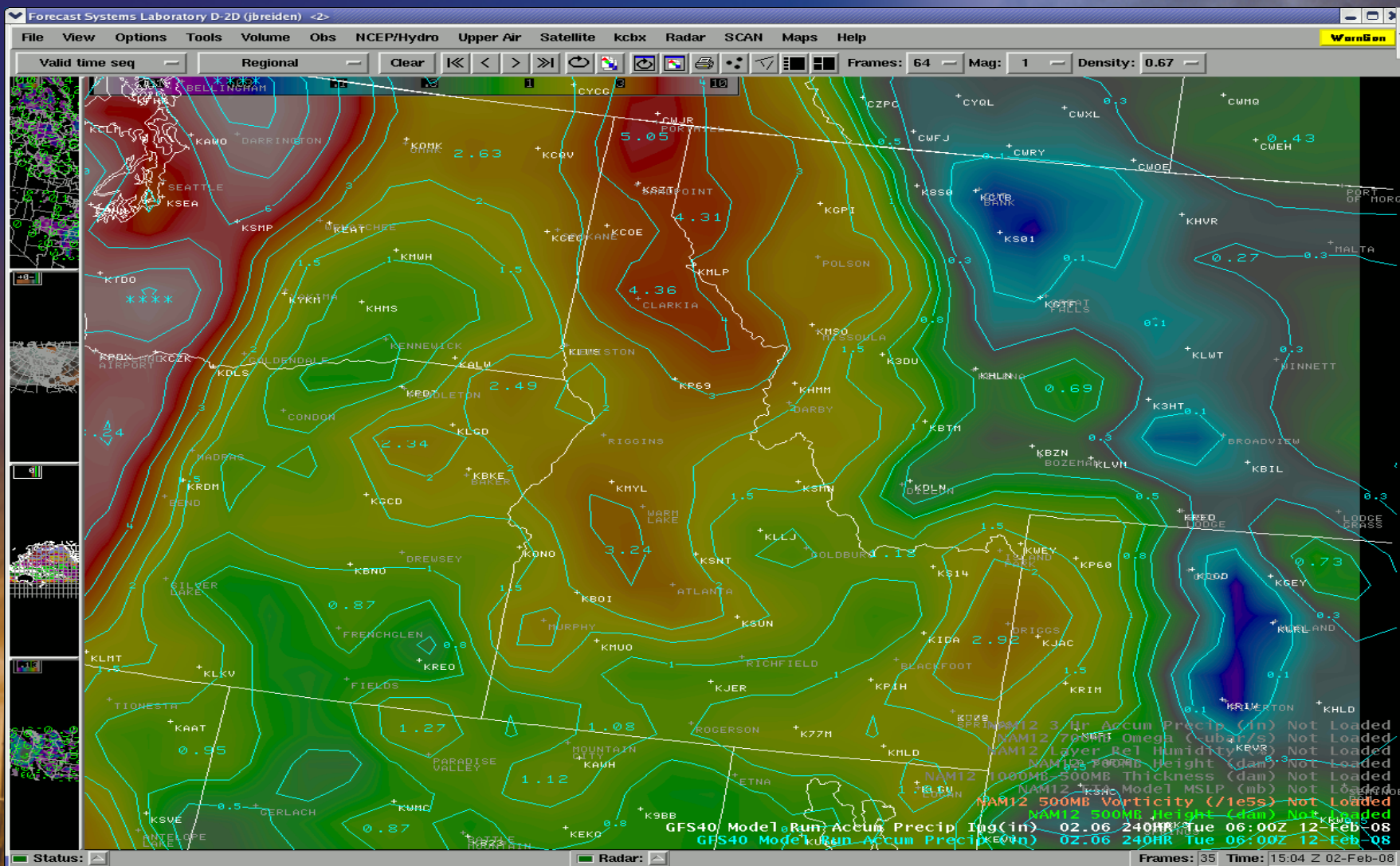
Frames: 37 Time: 13:51 Z 12-Mar-08

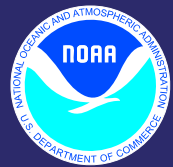
**Thursday, Mar 20th – Warm/Moist West South West Flow
(Model Uncertainty Increasing)**





10 day Model Precipitation Forecast





Flood Potential

Area of Concern

Weiser River in Adams and Washington County

Camas Creek in Camas County

Small Streams in Valley County

Small Streams in Clear Water River Basin

Streams in Idaho Panhandle Region

- Including St Joe, St Maries

Dates of Greatest Concern

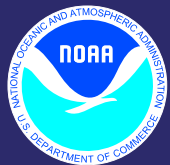
Late March through early April

Late March through early May

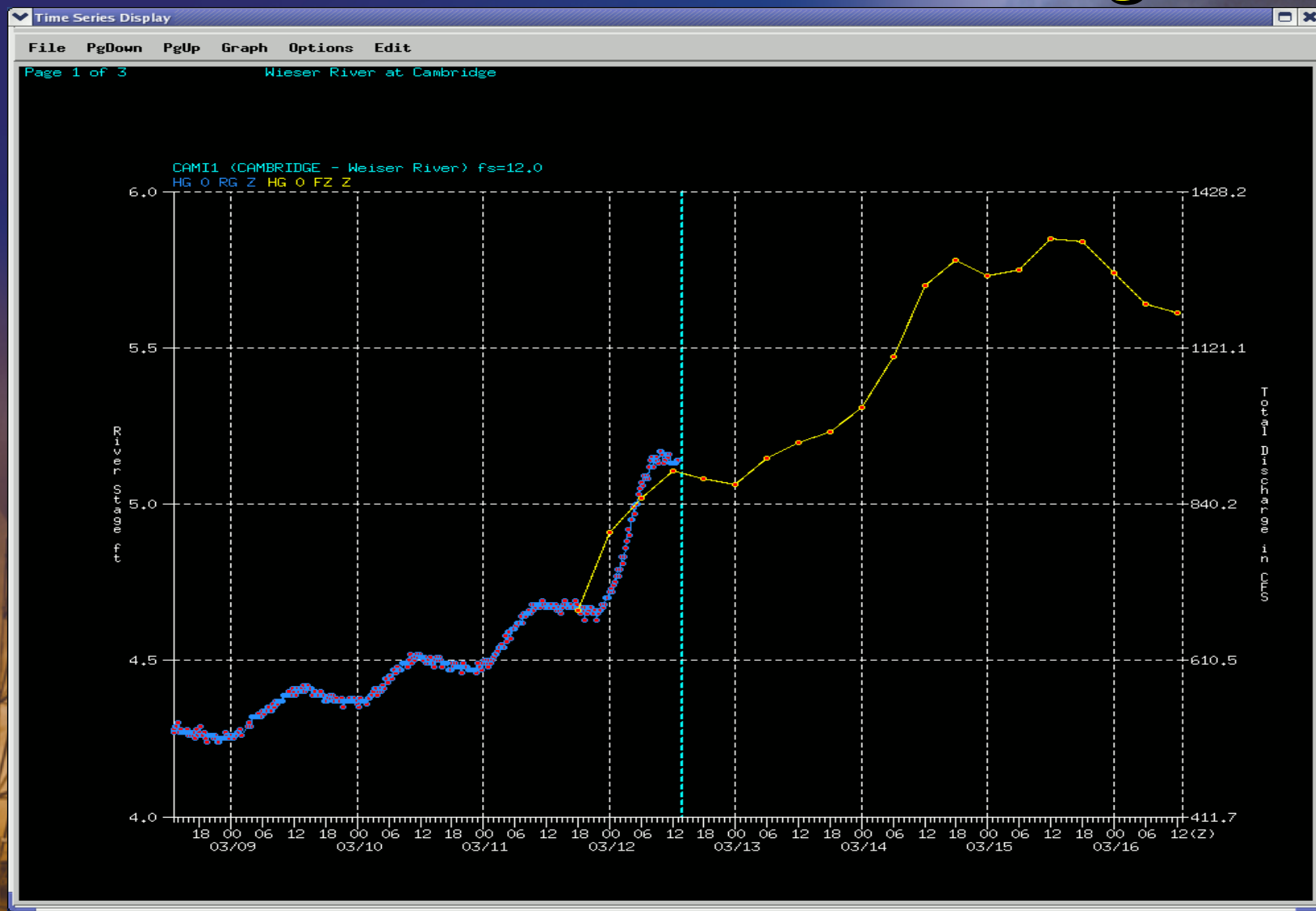
April through Early May

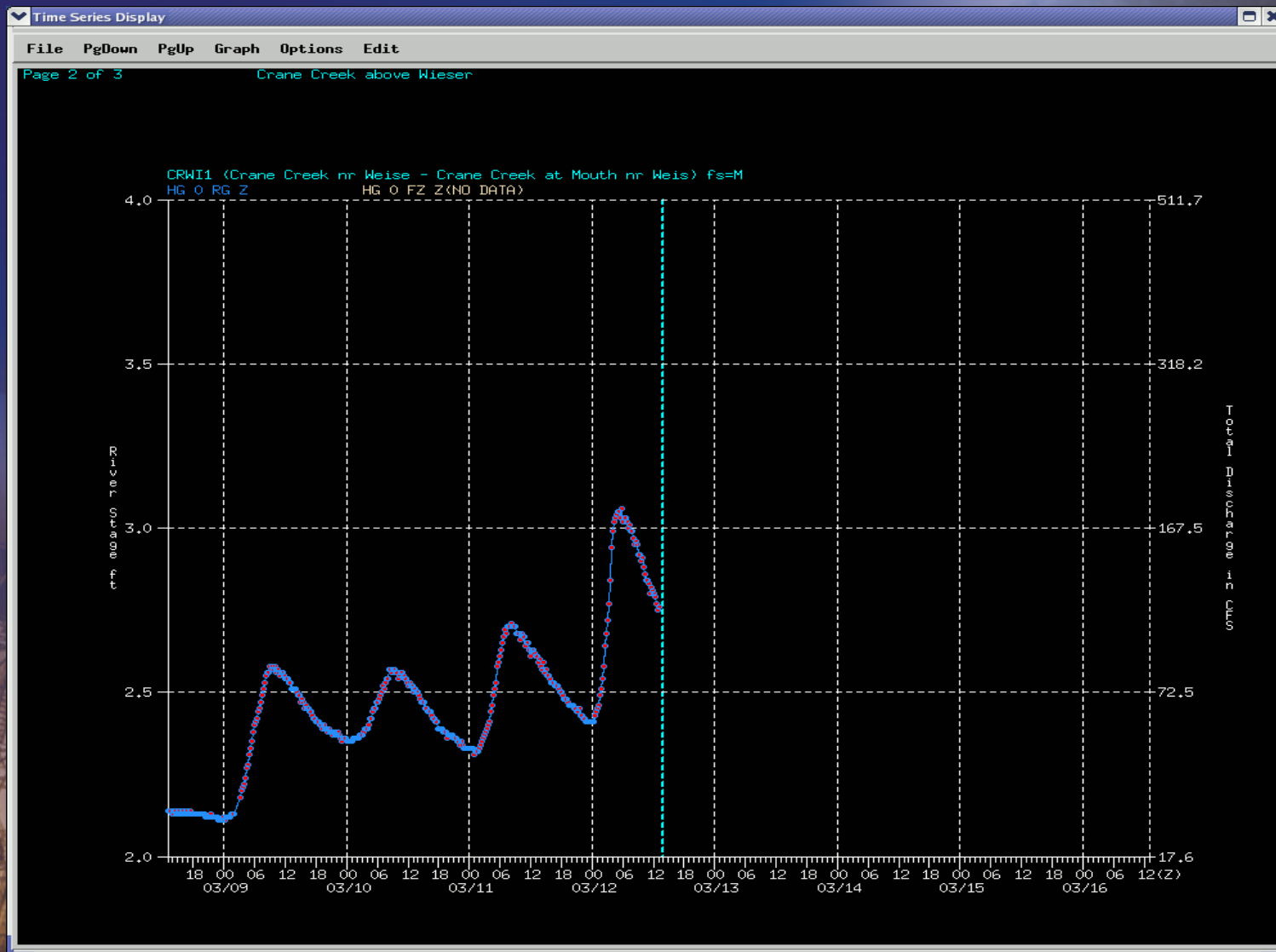
Late March through April

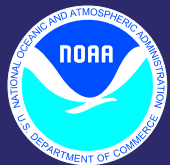
Late March through May



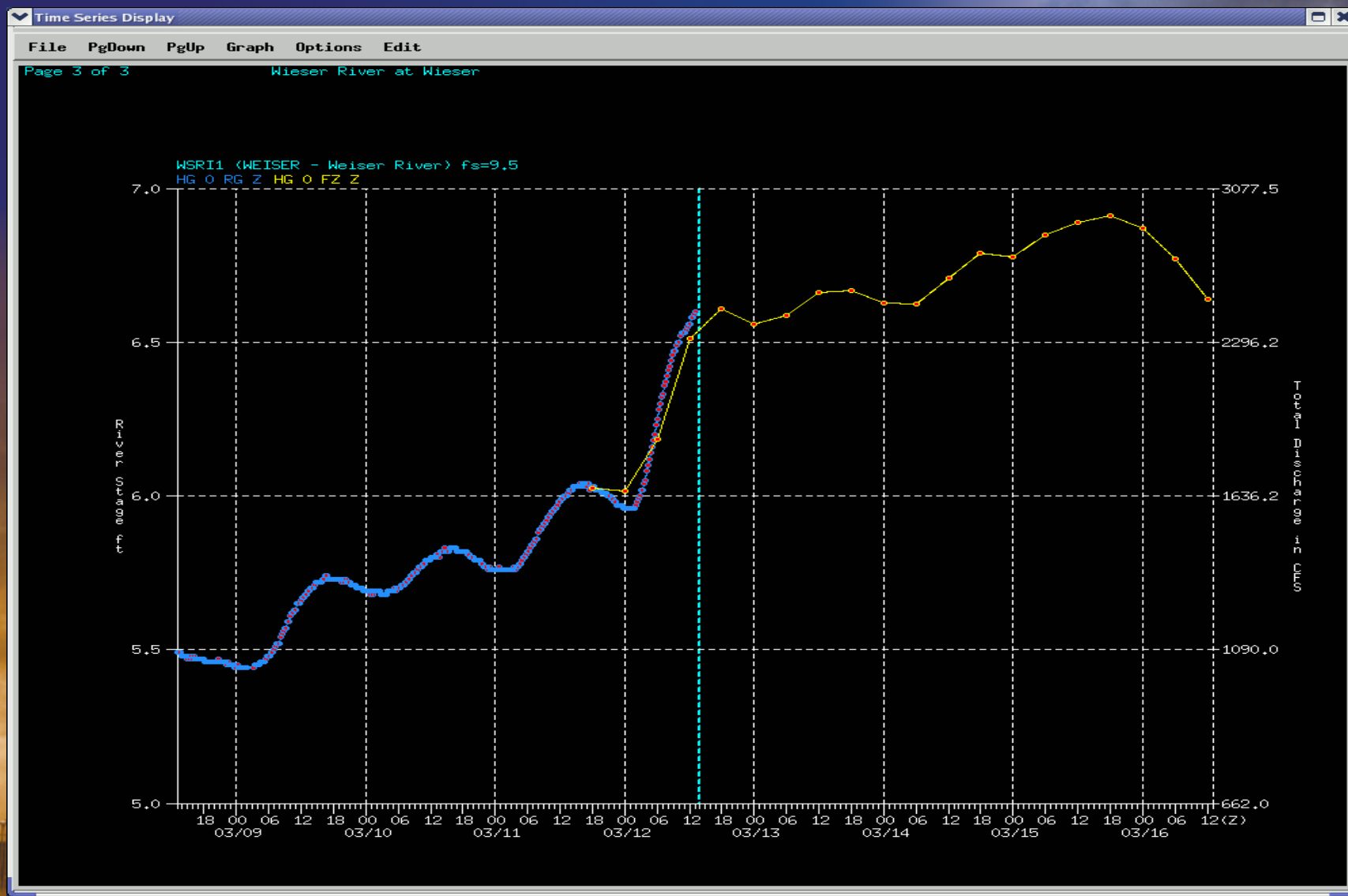
Weiser River at Cambridge







Weiser River near Weiser



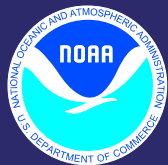


Current Information on Web

www.weather.gov/boise

www.nwrfc.noaa.gov/westernwater





Drought ?



U.S. Drought Monitor Idaho

March 4, 2008

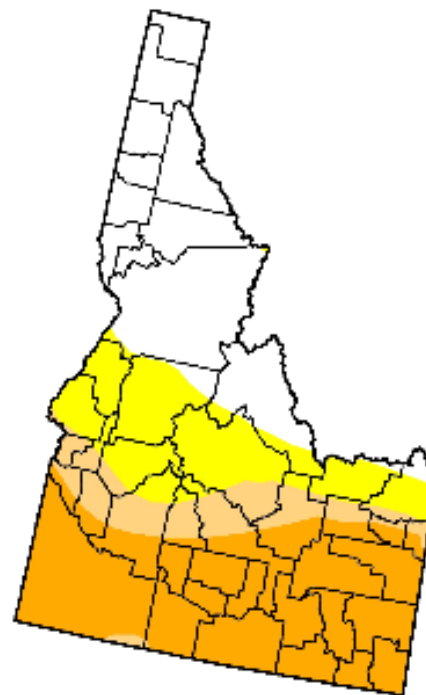
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	31.1	68.9	48.9	38.5	0.0	0.0
Last Week (02/26/2008 map)	30.5	69.5	52.4	39.5	0.0	0.0
3 Months Ago (12/11/2007 map)	0.5	99.5	88.8	51.3	0.0	0.0
Start of Calendar Year (01/01/2008 map)	0.5	99.5	88.7	51.3	0.0	0.0
Start of Water Year (10/02/2007 map)	0.0	100.0	100.0	100.0	34.1	0.0
One Year Ago (03/06/2007 map)	67.2	32.8	0.9	0.0	0.0	0.0

Intensity:

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



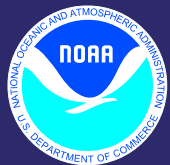
The Drought Monitor focuses on broad-scale conditions.
Local conditions may vary. See accompanying text summary
for forecast statements

<http://drought.unl.edu/dm>

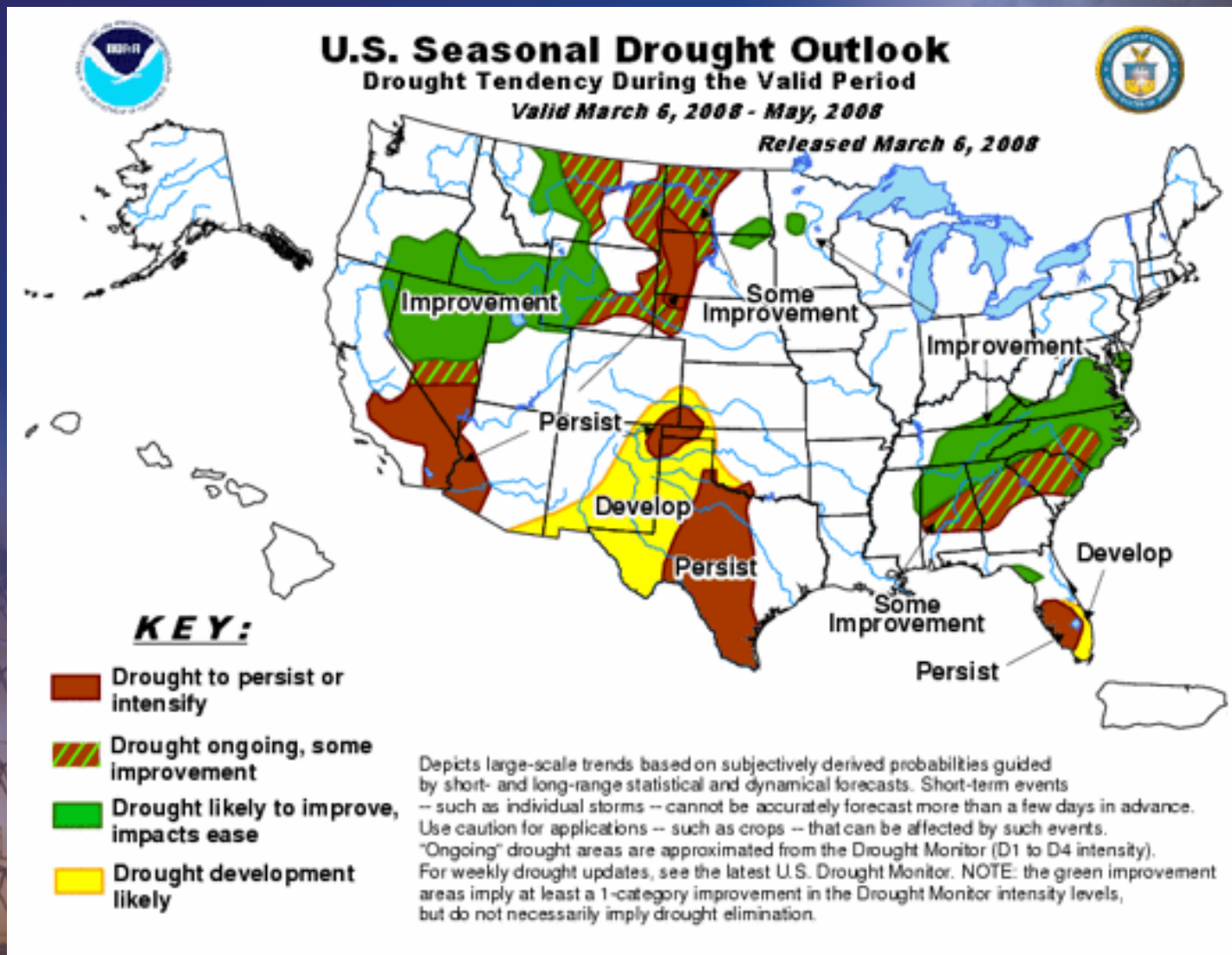


Released Thursday, March 6, 2008

Author: Brian Fuchs, National Drought Mitigation Center



Drought Outlook



RECLAMATION

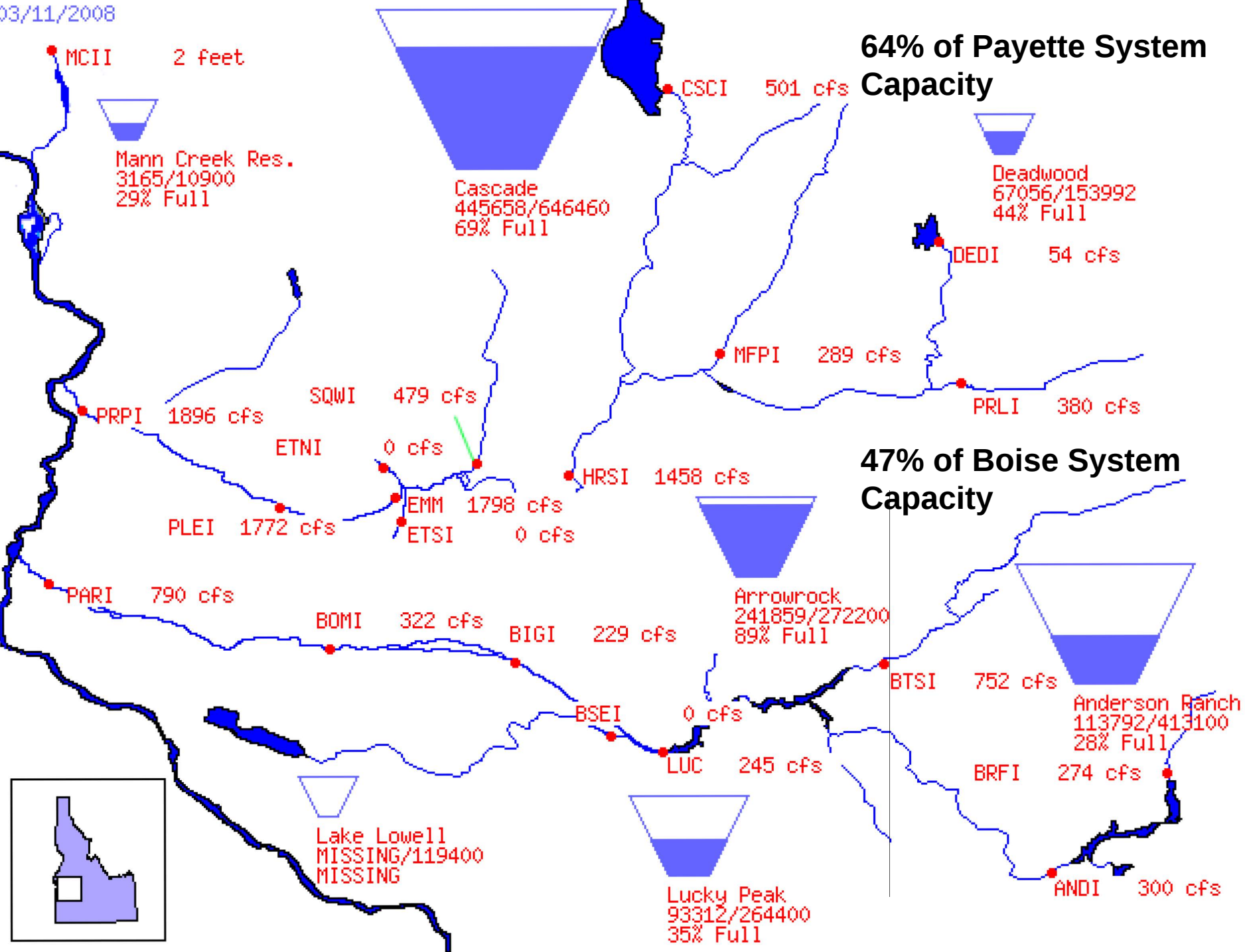
Managing Water in the West

Idaho Water Supply Committee Meeting

Southwest Idaho Report
March 13, 2008



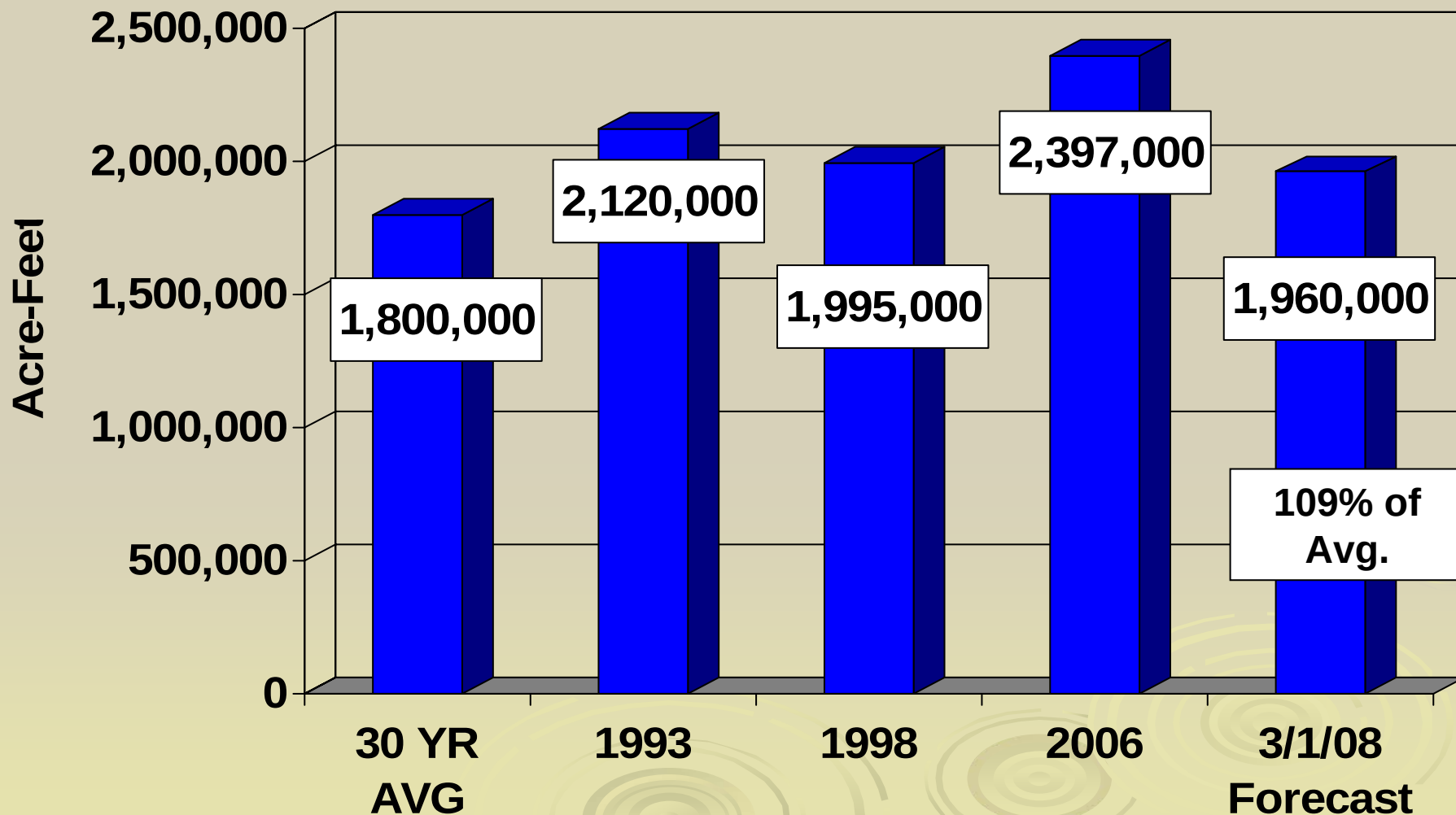
U.S. Department of the Interior
Bureau of Reclamation





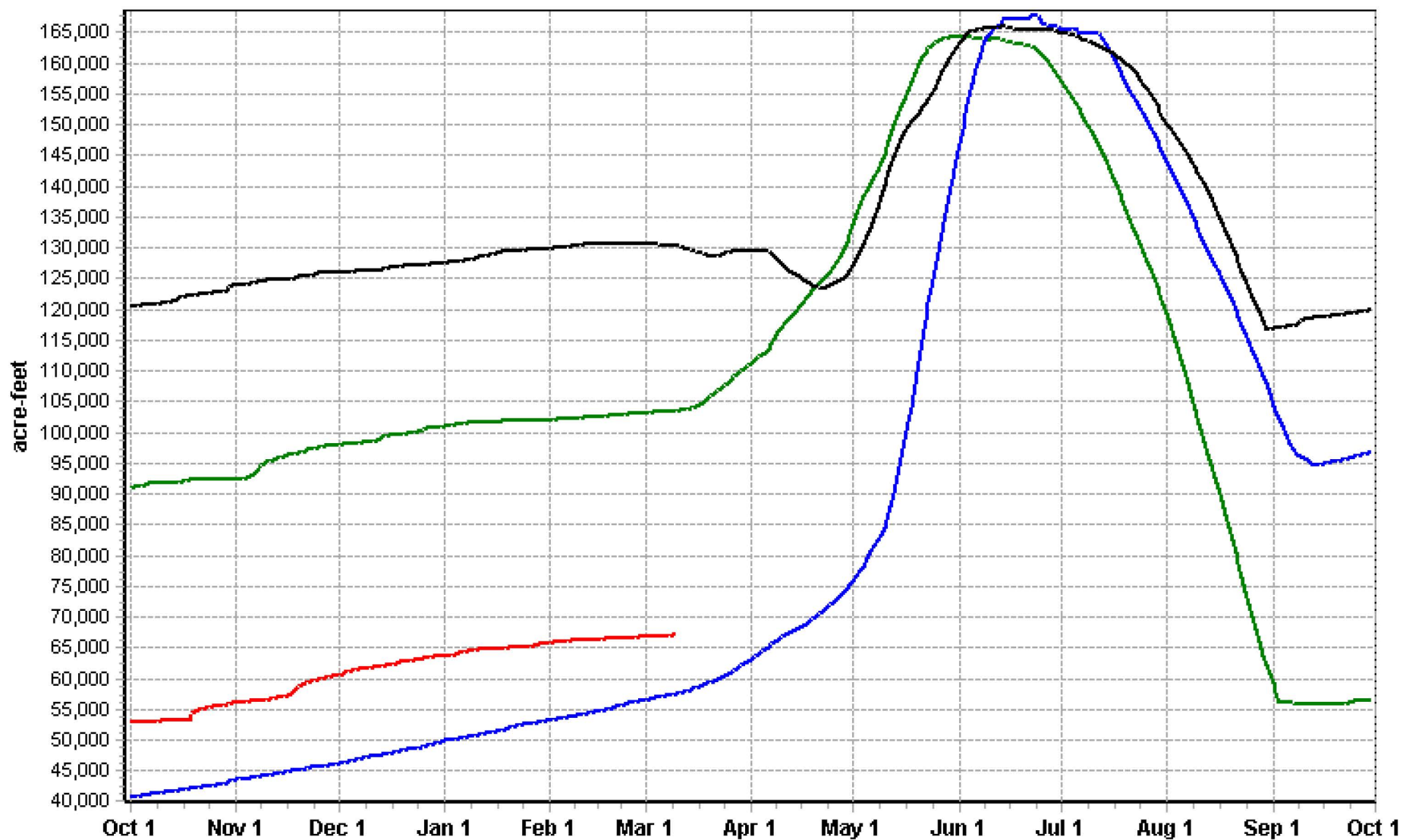
Payette River Runoff at Horseshoe Bend

March 1 – July 31



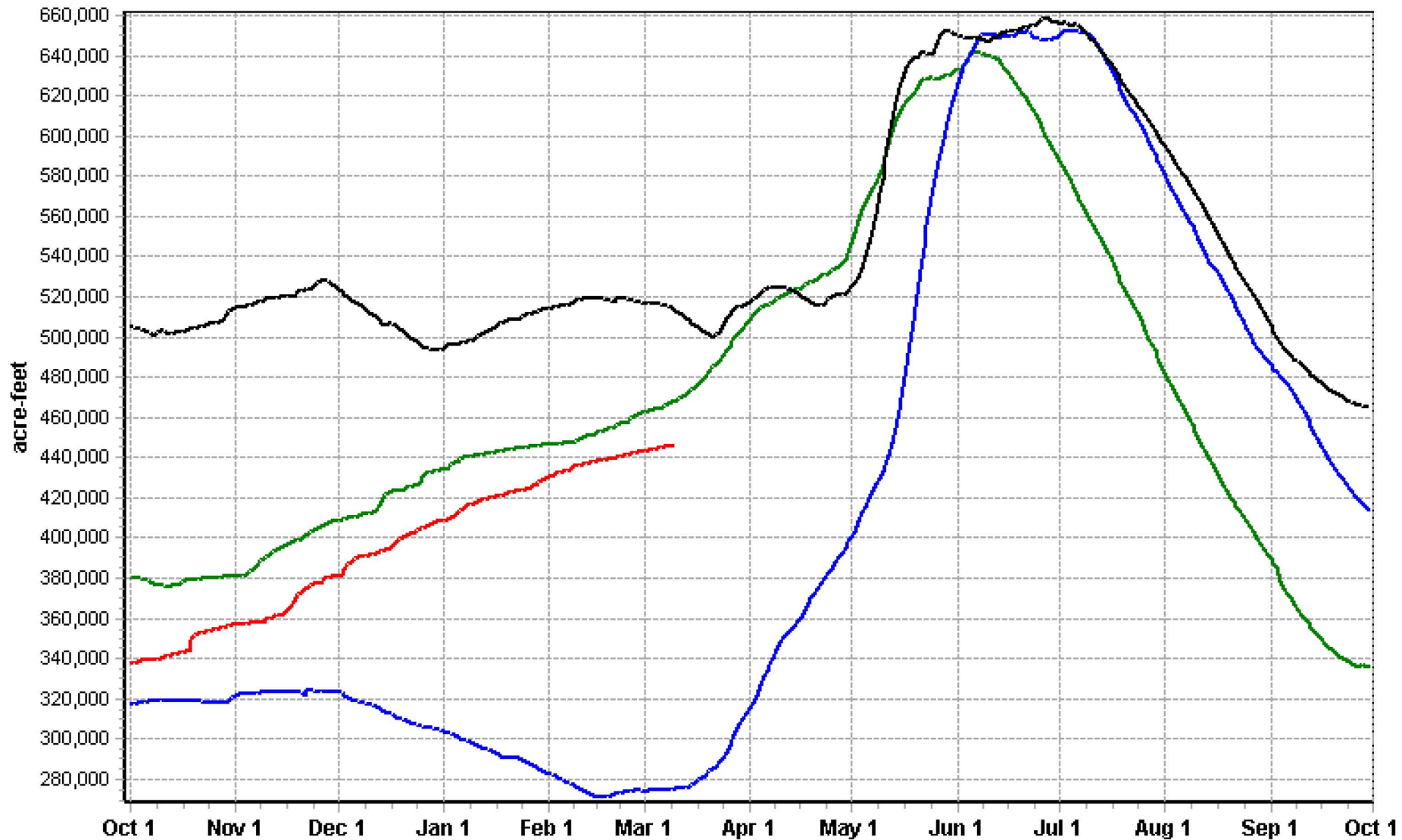
Deadwood Reservoir Storage (capacity = 153,992 af)

— 2008 — 2007 — 1993 — 1998



Cascade Reservoir Storage (Capacity = 646,460 af)

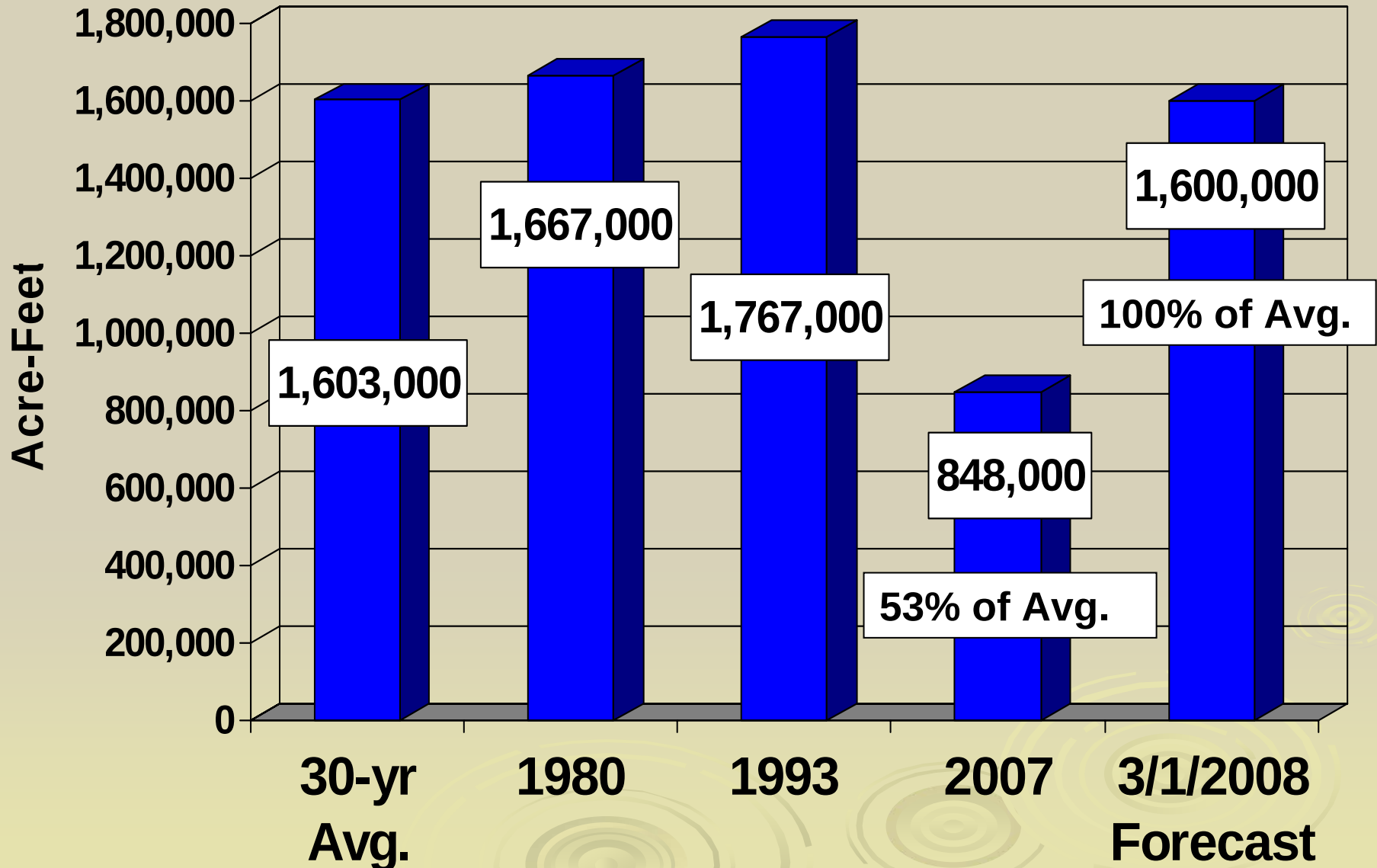
— 2008 — 2007 — 1993 — 1998



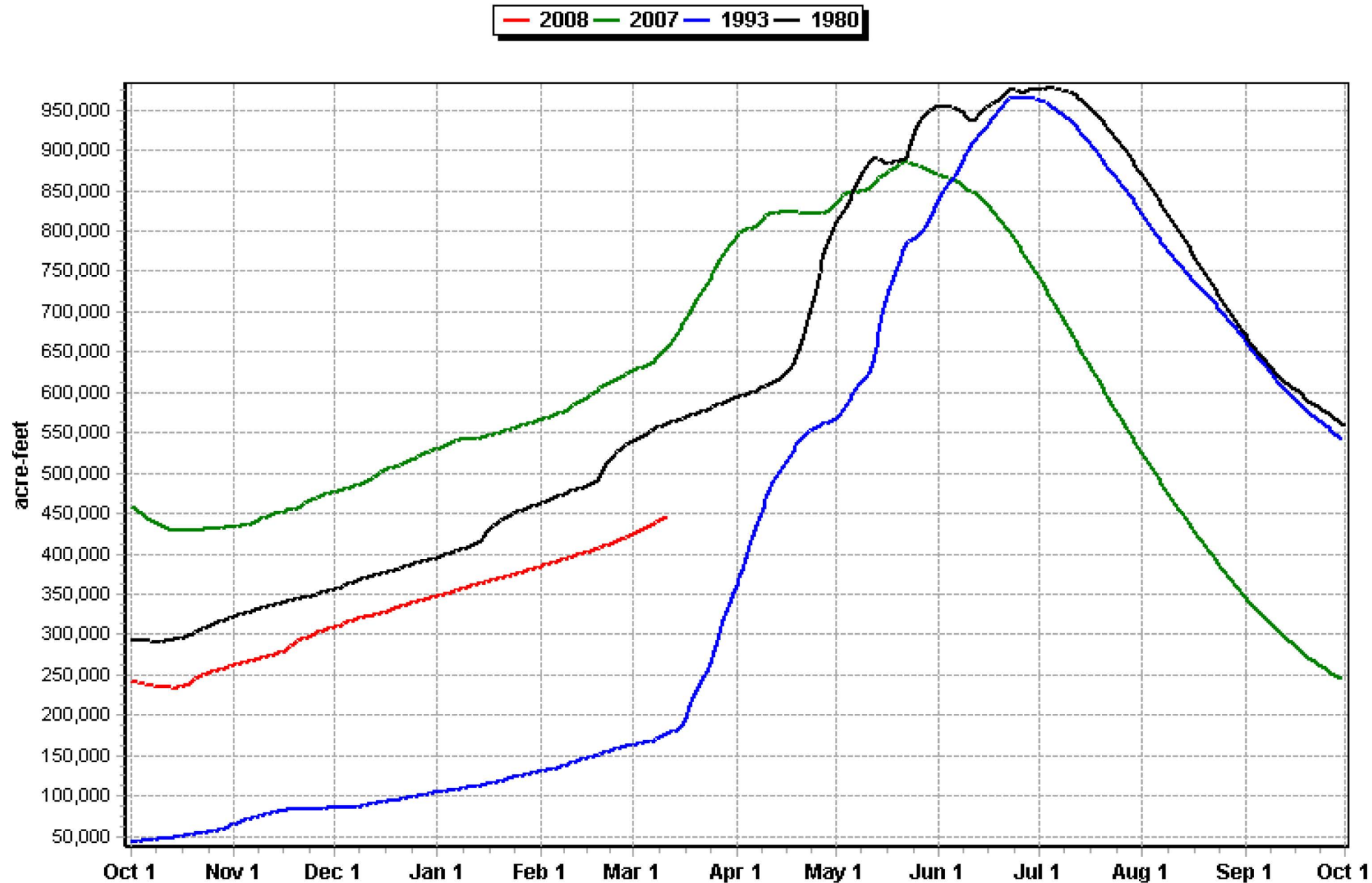


Boise Basin Runoff

March 1 – July 31

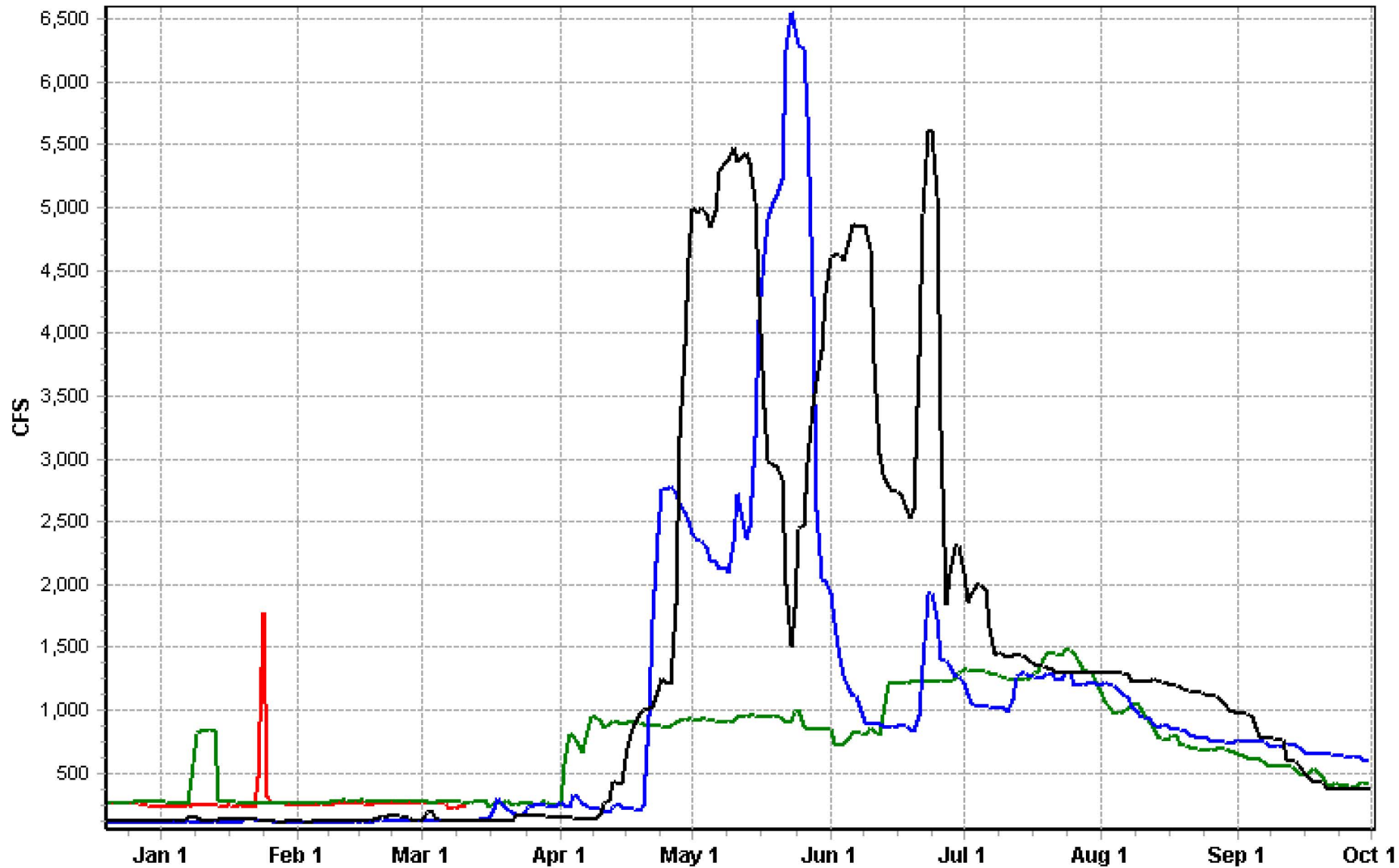


Boise System Reservoir Storage (capacity = 949,700 acre-ft)

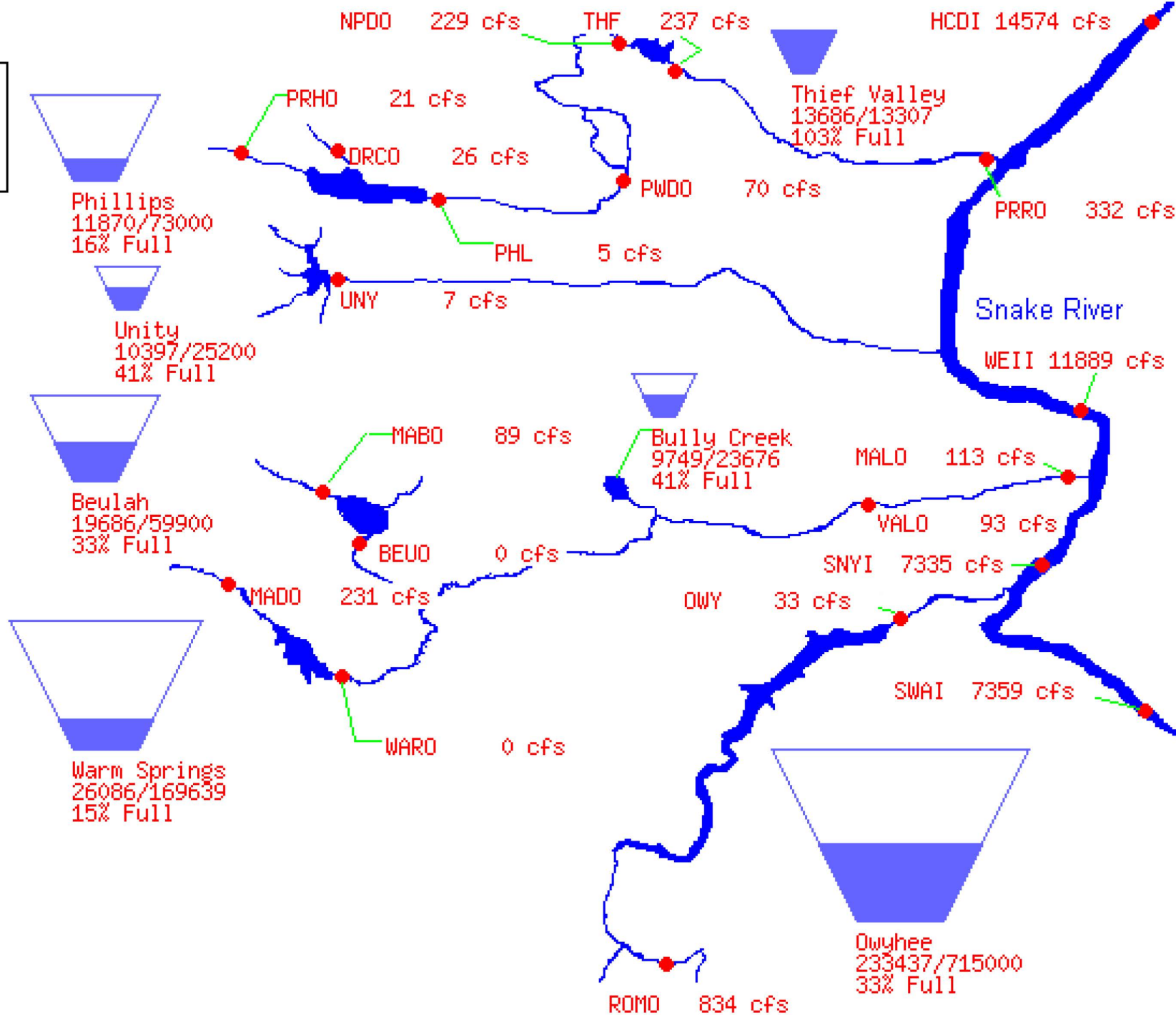
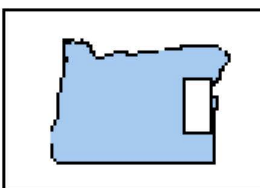


River Flows through Boise

2008 2007 1993 1980

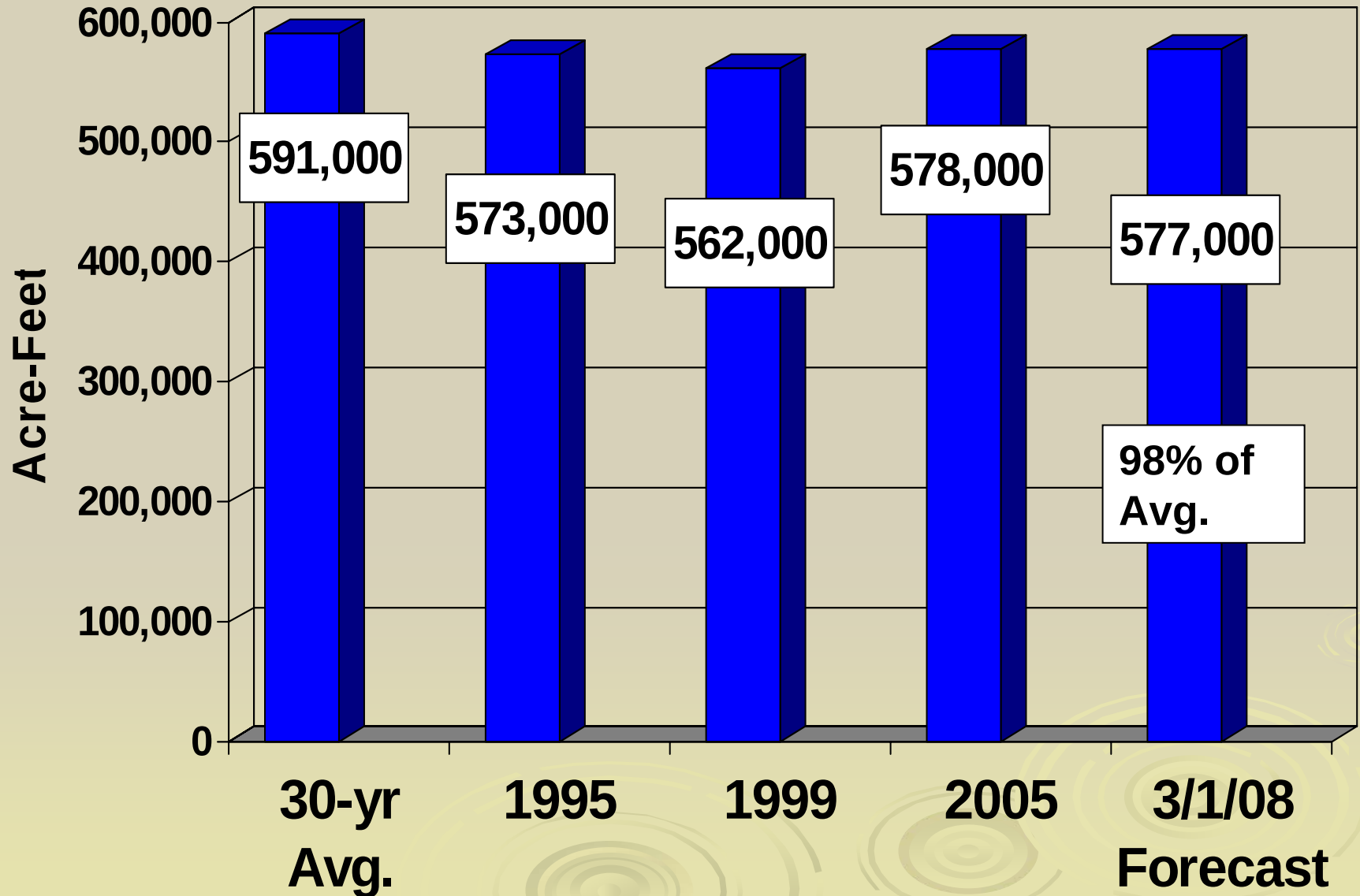






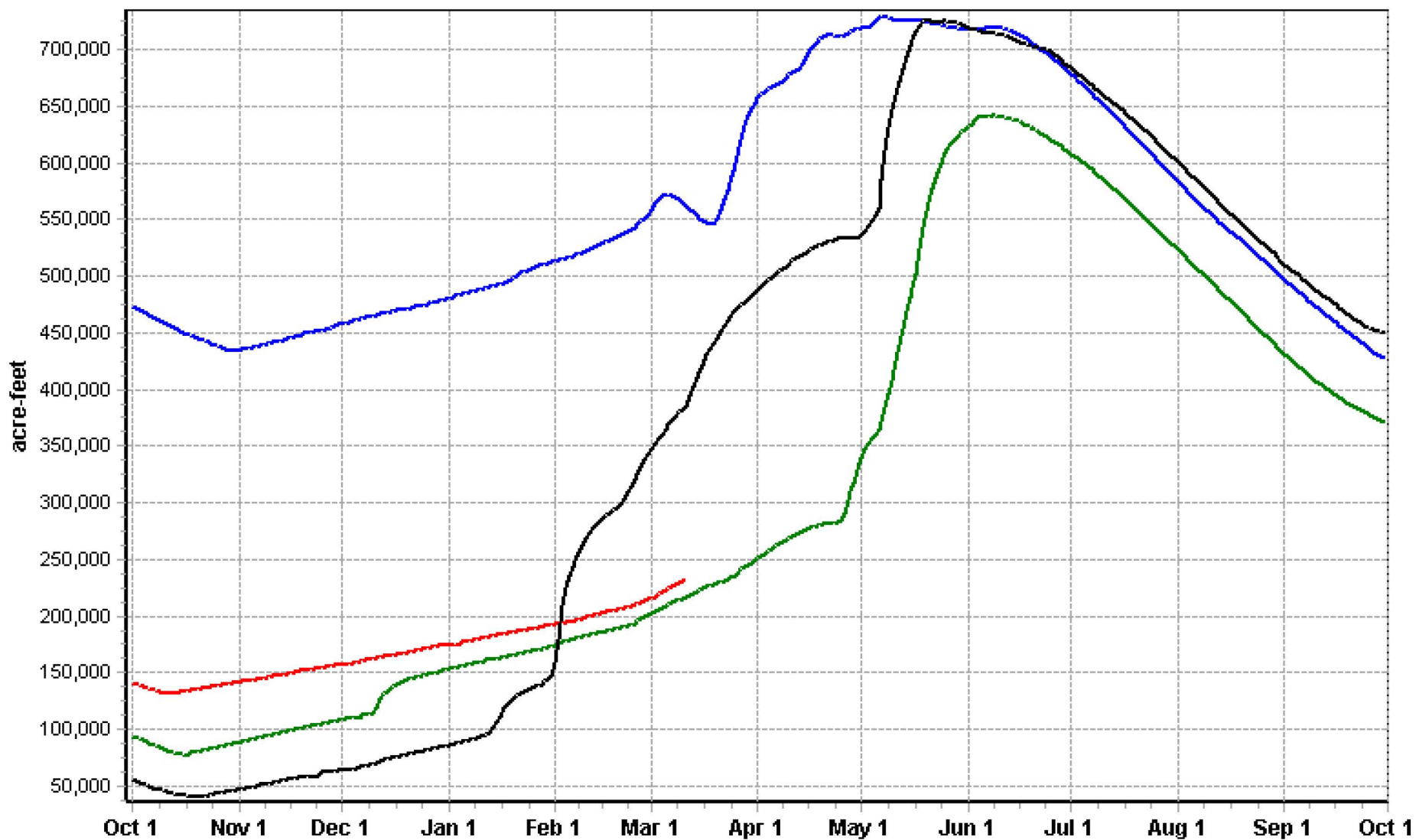
Owyhee Basin Runoff

March 1 – June 30



Owyhee Reservoir Storage (capacity = 715,000 acre-ft)

— 2008 — 2005 — 1999 — 1995





RECLAMATION

Managing Water in the West

Upper Snake Reservoir Operations Idaho Water Supply Committee

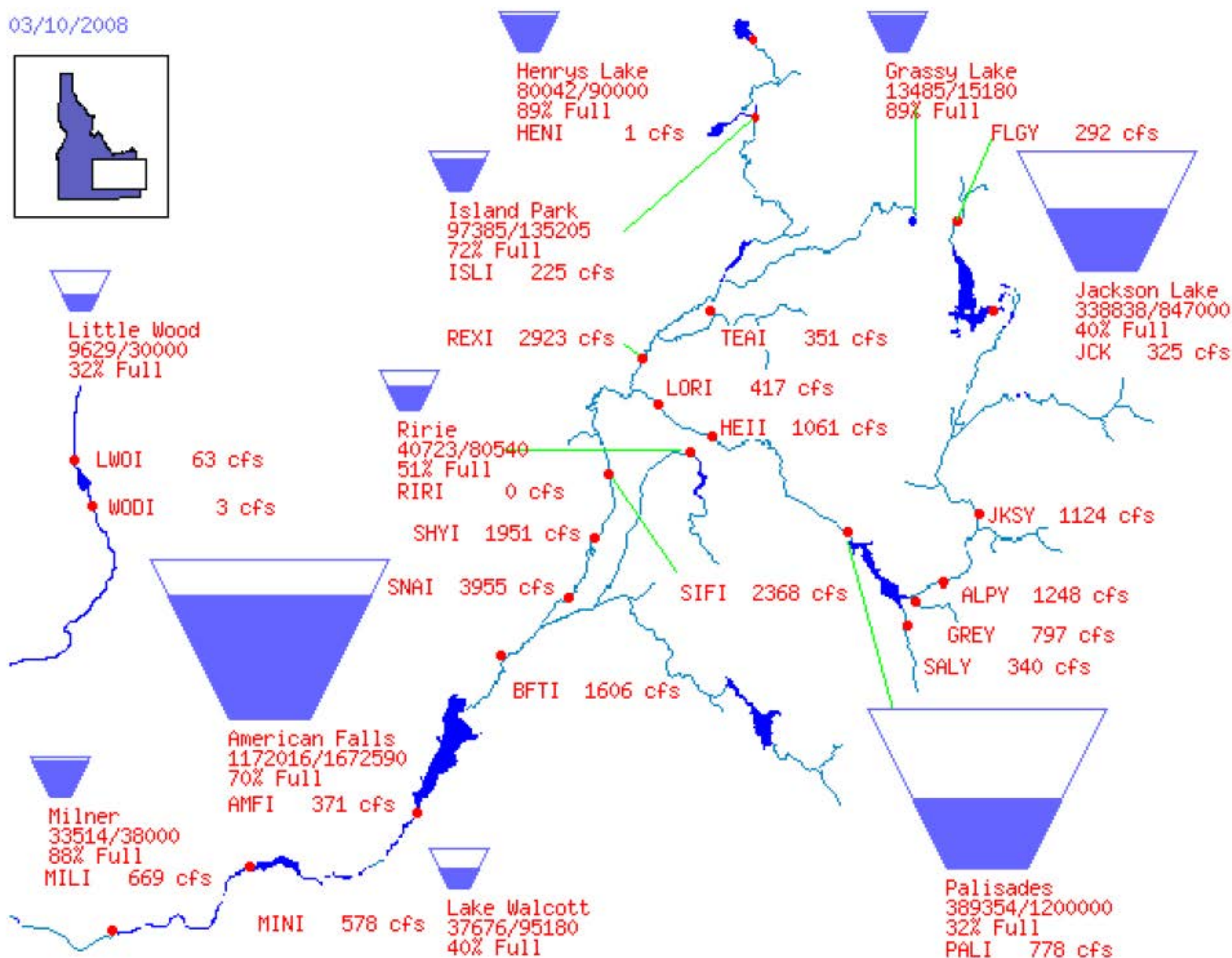
March 12, 2008

**Mike Beus, Water Operations Manager
Snake River Area Office, Burley**

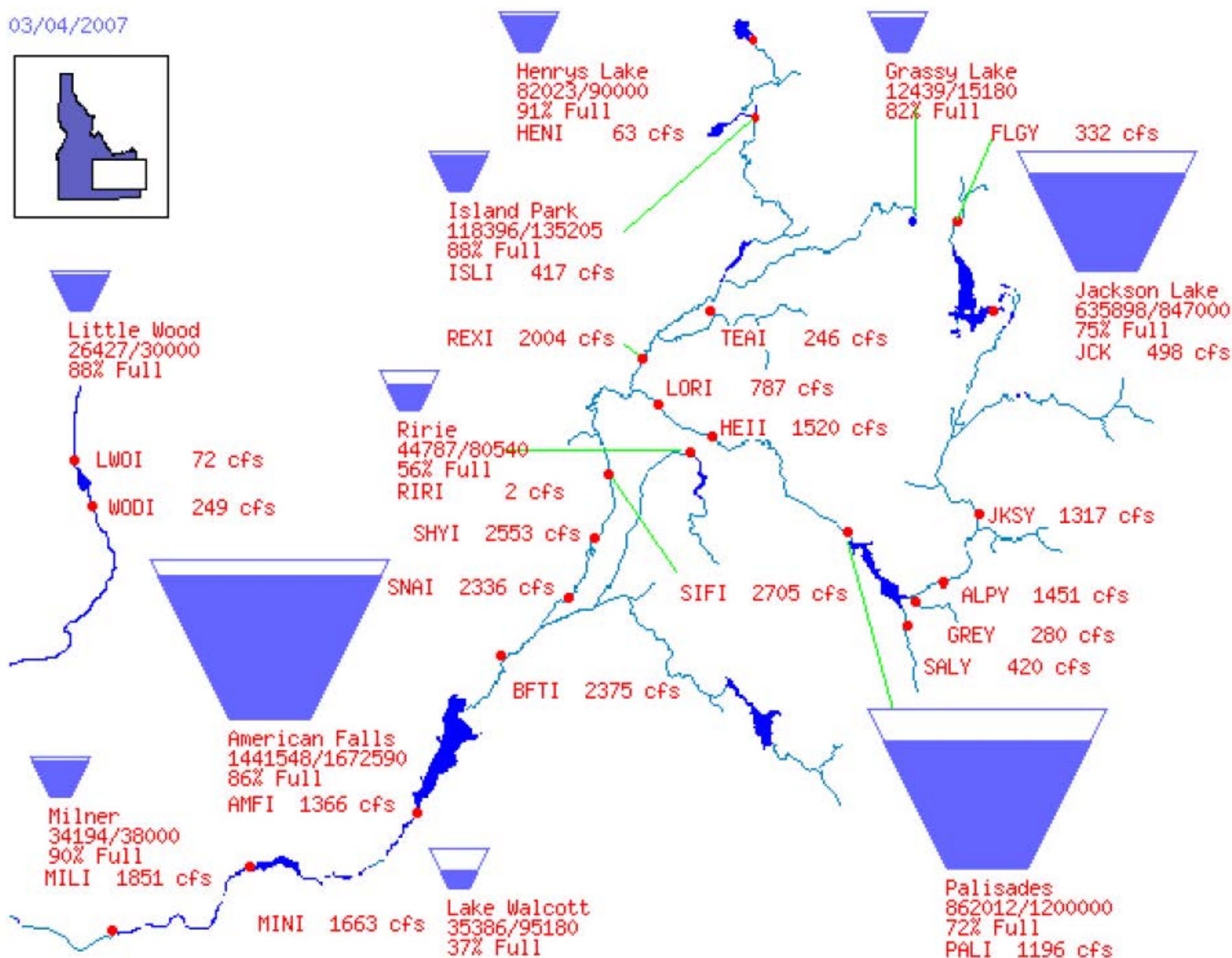


U.S. Department of the Interior
Bureau of Reclamation

03/10/2008

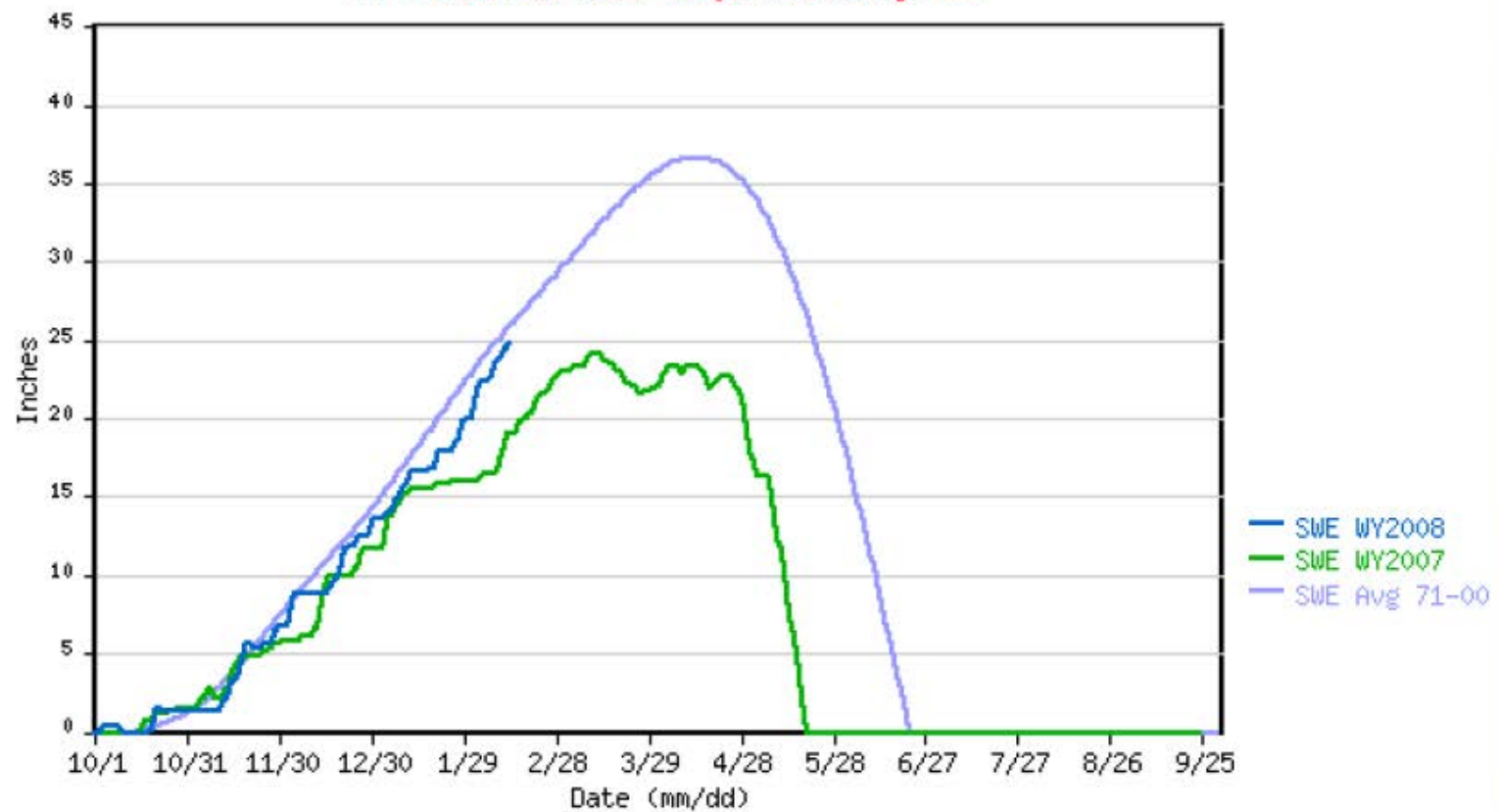


03/04/2007



LEWIS LAKE DIVIDE SNOTEL as of 02/13/2008

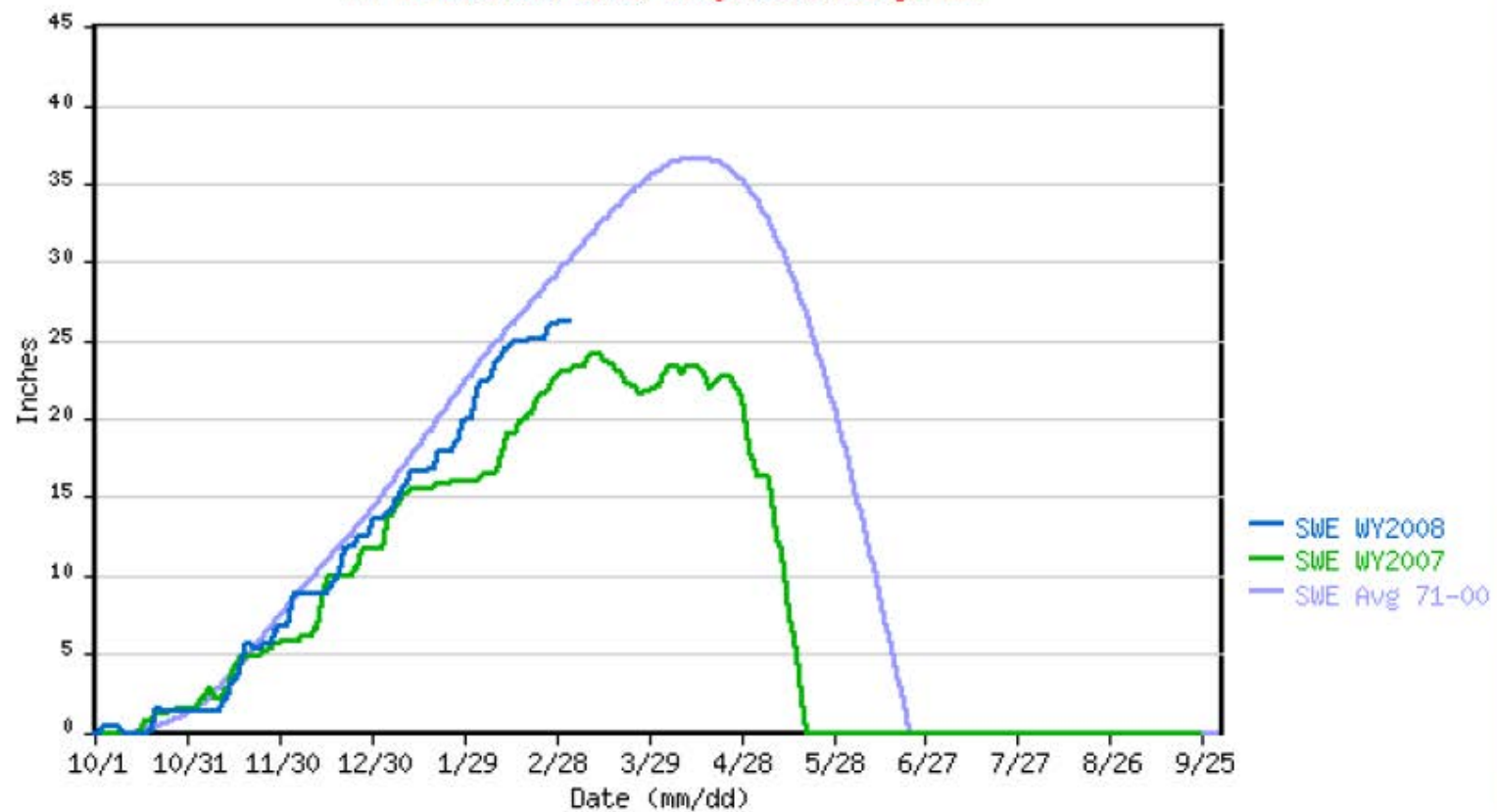
*** Provisional Data, Subject to Change ***



RECLAMATION

LEWIS LAKE DIVIDE SNOTEL as of 03/03/2008

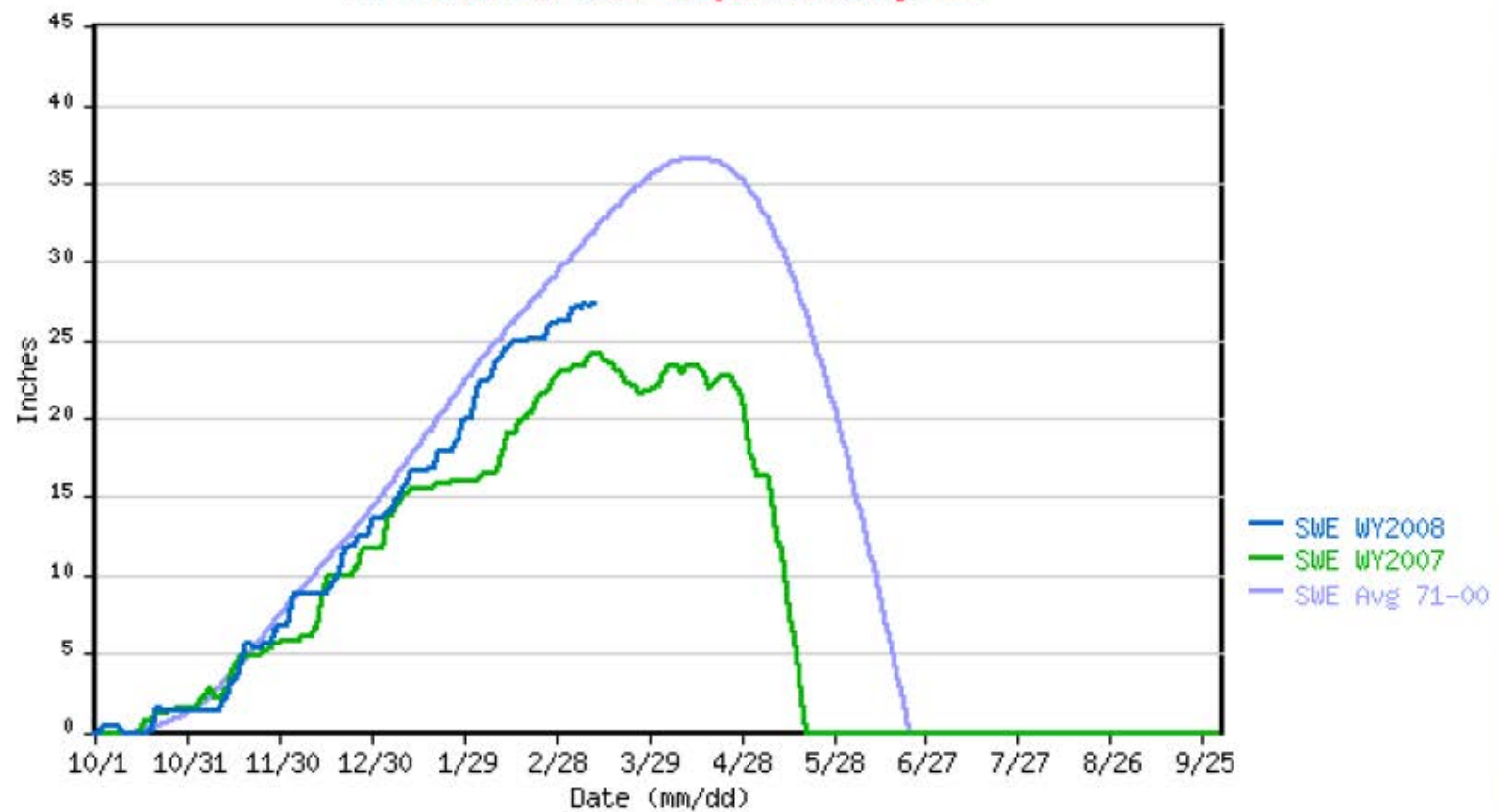
*** Provisional Data, Subject to Change ***



RECLAMATION

LEWIS LAKE DIVIDE SNOTEL as of 03/11/2008

*** Provisional Data, Subject to Change ***



RECLAMATION

CURRENT
MONTHLY FORECAST SUMMARY
MARCH 1 2008

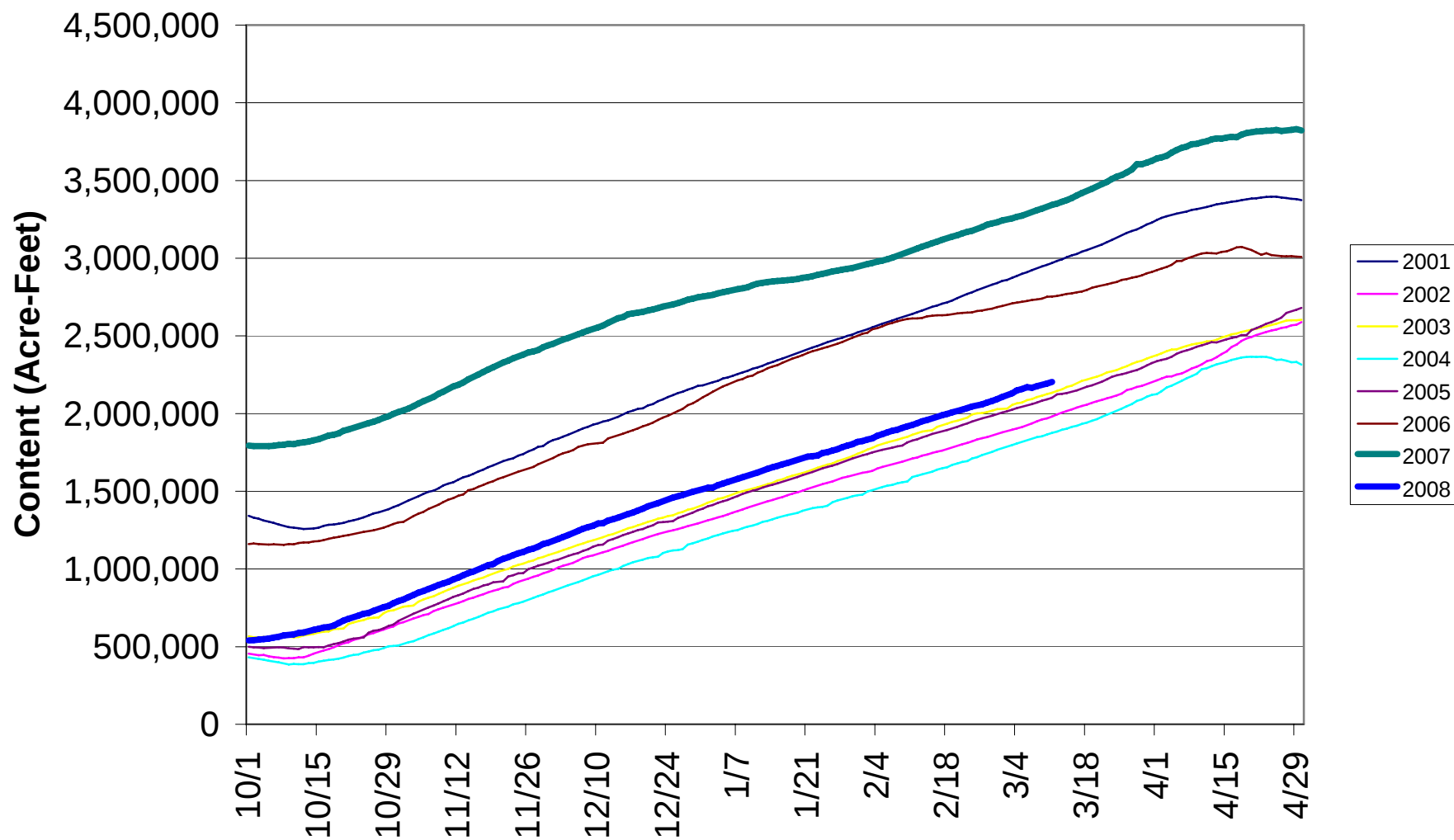
		NORMAL SUBSEQUENT CONDITIONS			120% NORMAL SUBSEQUENT CONDITIONS		80% NORMAL SUBSEQUENT CONDITIONS	
		1971-2000 AVERAGE (1000AF)	FORECAST (1000AF)	PERCENT NORMAL	FORECAST (1000AF)	PERCENT NORMAL	FORECAST (1000AF)	PERCENT NORMAL
FORECAST PERIOD								
		AVE	NORM	%	HIGH	%	LOW	%
ANDERSON	MAR-JUL	588.5	578.0	98	651.0	111	562.1	96
BAKER	MAR-JUL	76.5	84.0	110				
BEULAH LTF	MAR-JUN	76.4	78.4	103	86.7	113	70.1	92
BOISE	MAR-JUL	1603.8	1600.0	*** 100	1818.5	113	1575.4	98
BULLY CREEK LTF	MAR-JUN	24.3	22.5	93	27.1	112	17.8	73
CASCADE	MAR-JUL	569.0	622.3	109	669.9	118	574.7	101
DEADWOOD	MAR-JUL	140.8	146.2	104	157.1	112	135.3	96
HEISE	MAR-JUL	3771.0	3600.0	*** 95	4000.1	106	3343.9	89
ISLAND PARK	MAR-JUL	266.9	258.0	97	284.4	107	207.2	78
JACKSON LAKE	MAR-JUL	847.8	864.0	102	933.1	110	794.9	94
LITTLE WOOD	MAR-JUL	96.5	107.0	*** 111	114.7	119	96.0	99
MAL. NR. DREWSEY	MAR-JUN	107.7	113.1	105	126.3	117	99.9	93
MANN CREEK	MAR-JUN	25.9	28.5	110				
OWYHEE	MAR-JUN	591.0	577.0	98				
OWYHEE NR. ROME	MAR-JUN	562.8	572.8	102	641.8	114	503.8	90
HORSESHOE BEND	MAR-JUL	1800.5	1960.0	109				
RIRIE_NEW	MAR-JUN	88.1	78.0	*** 89	88.1	100	62.1	70
TETON	MAR-JUL	442.8	408.0	92	427.9	97	352.1	80
UNITY	MAR-JUL	51.4	57.0	112				
WARM SPRINGS LTF	MAR-JUN	117.4	122.0	104	136.0	116	108.1	92
WILDHORSE	MAR-JUN	33.0	33.5	102	37.8	115	29.1	88

x*** Coordinated with Corp of Engineers

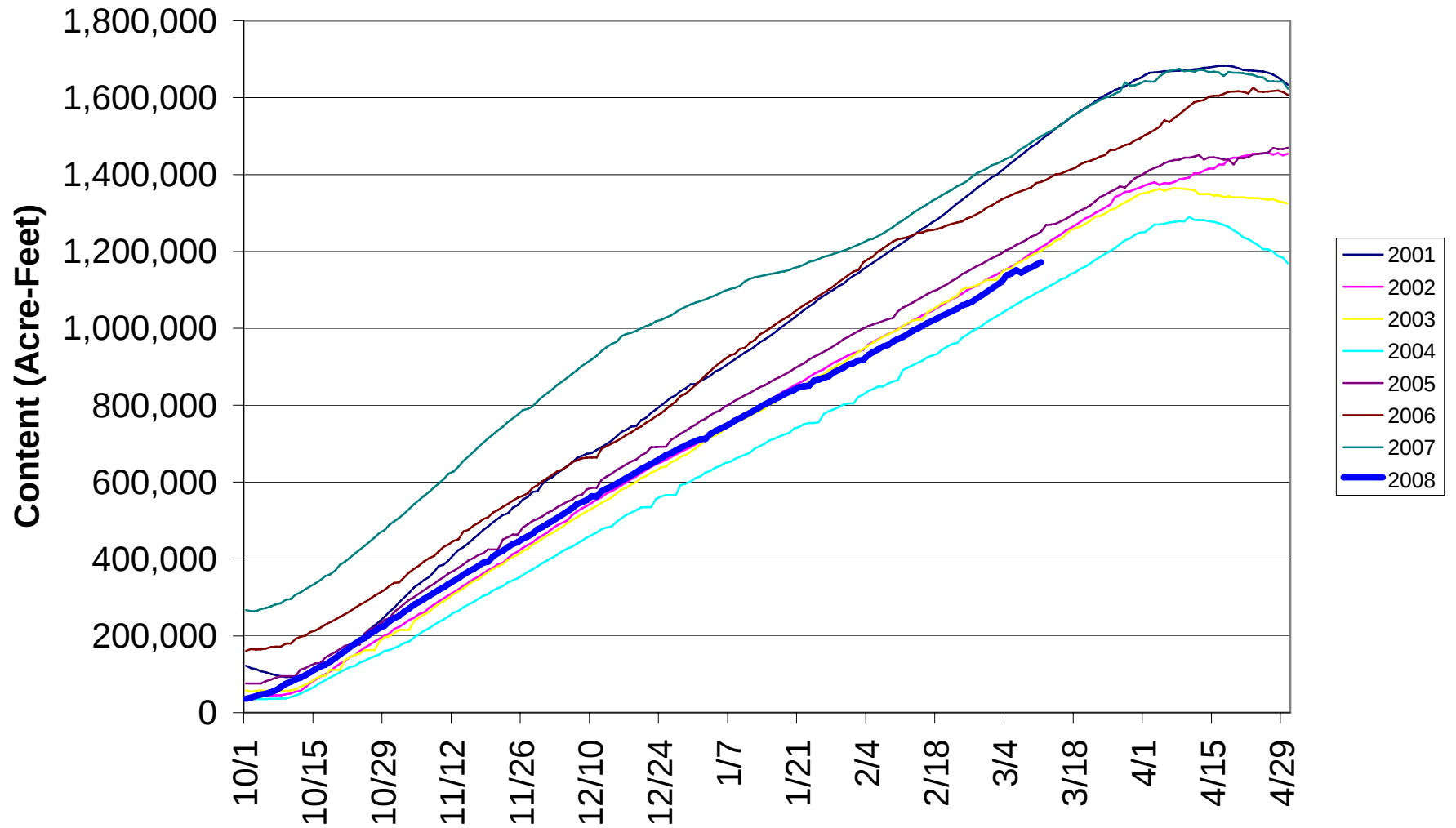
xListing of only one volume indicates an edited result and should be considered the 'adopted' forecast.

		AVE	NORM	%
ANDERSON	MAR-JUL	588.5	578.0	98
BAKER	MAR-JUL	76.5	84.0	110
BEULAH LTF	MAR-JUN	76.4	78.4	103
BOISE	MAR-JUL	1603.8	1600.0 ***	100
BULLY CREEK LTF	MAR-JUN	24.3	22.5	93
CASCADE	MAR-JUL	569.0	622.3	109
DEADWOOD	MAR-JUL	140.8	146.2	104
HEISE	MAR-JUL	3771.0	3600.0 ***	95
ISLAND PARK	MAR-JUL	266.9	258.0	97
JACKSON LAKE	MAR-JUL	847.8	864.0	102
LITTLE WOOD	MAR-JUL	96.5	107.0 ***	111
MAL. NR. DREWSEY	MAR-JUN	107.7	113.1	105
MANN CREEK	MAR-JUN	25.9	28.5	110
OWYHEE	MAR-JUN	591.0	577.0	98
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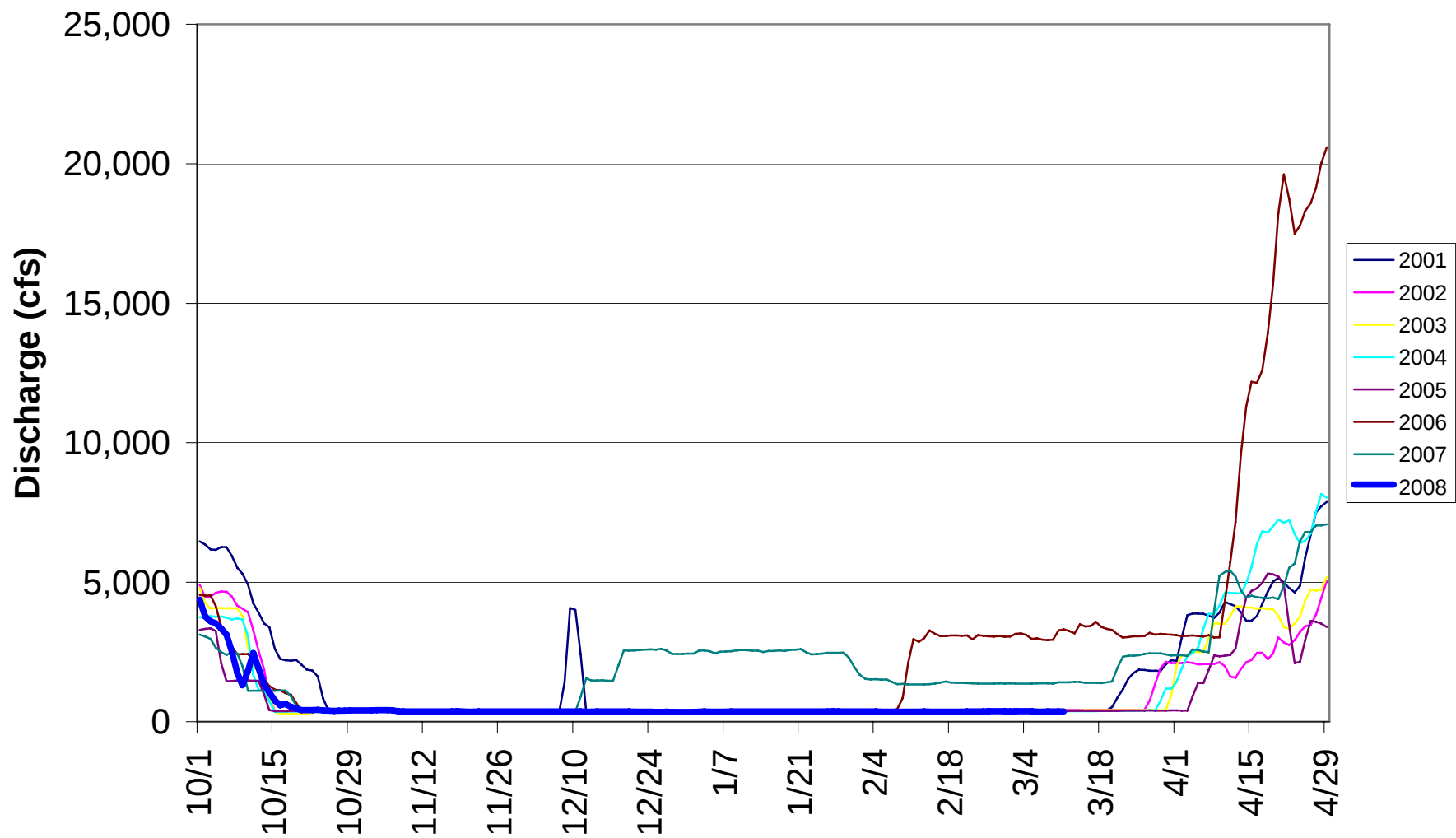
Reservoir System above Milner



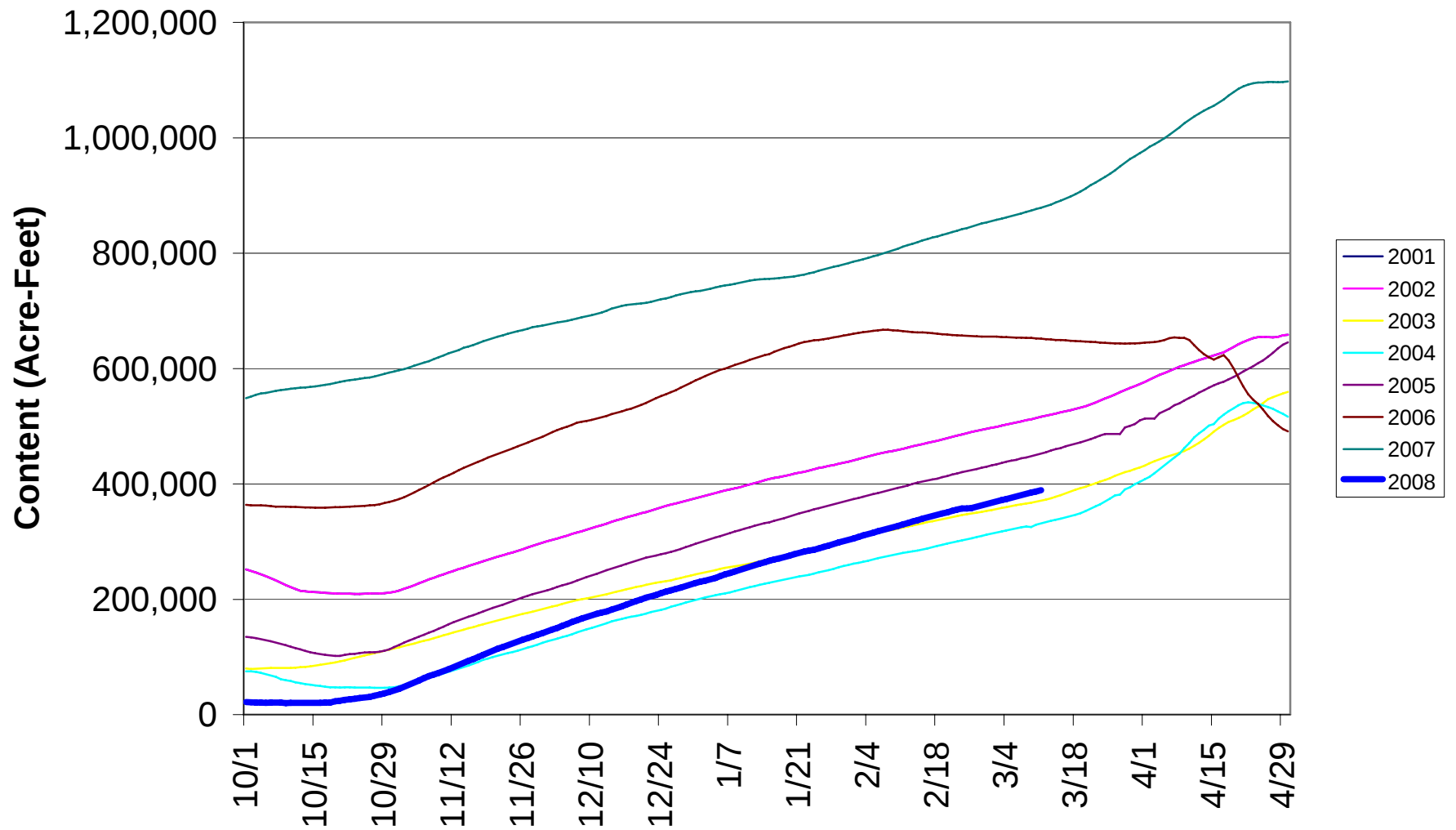
American Falls Reservoir



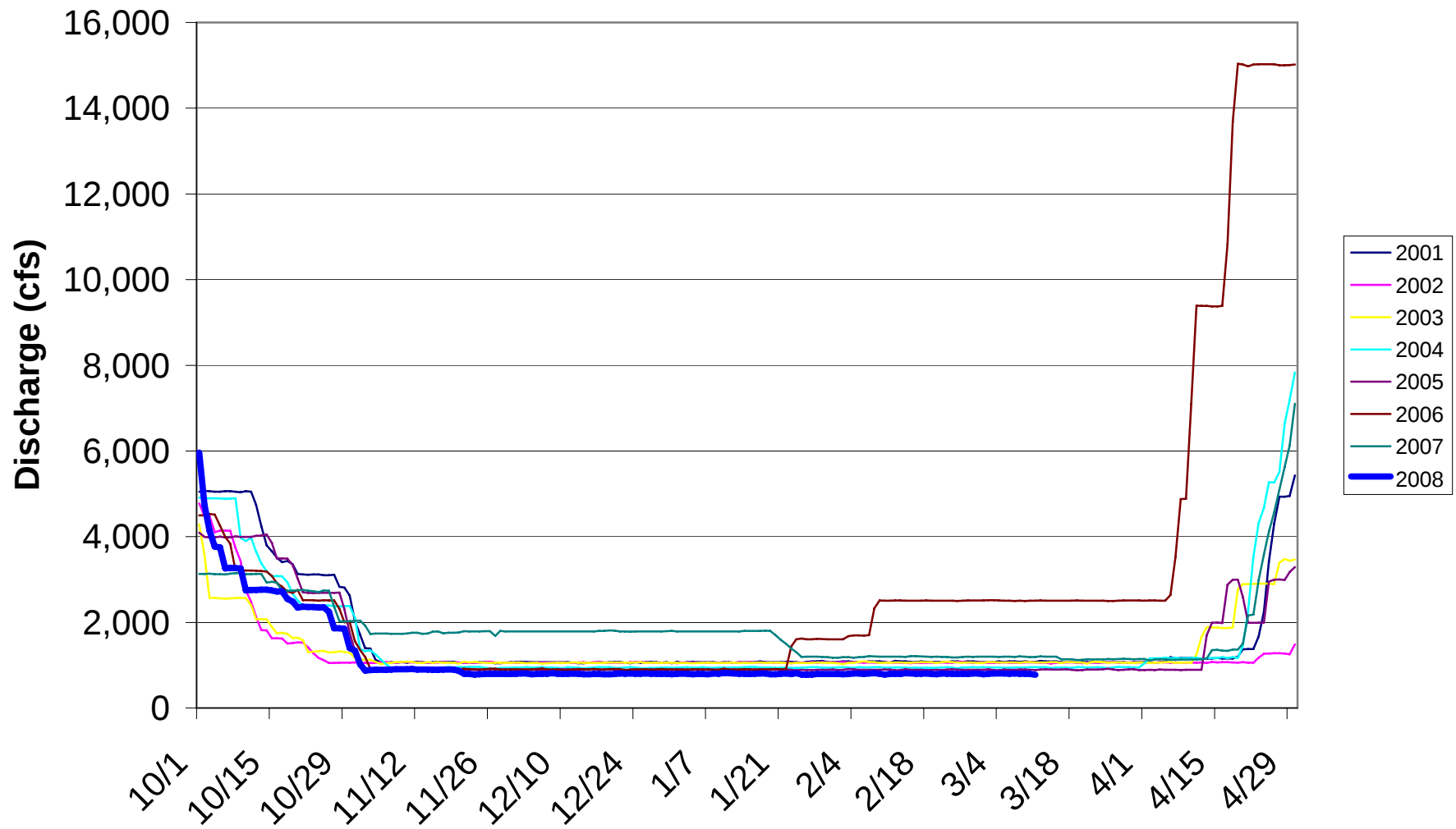
Snake River at Neeley



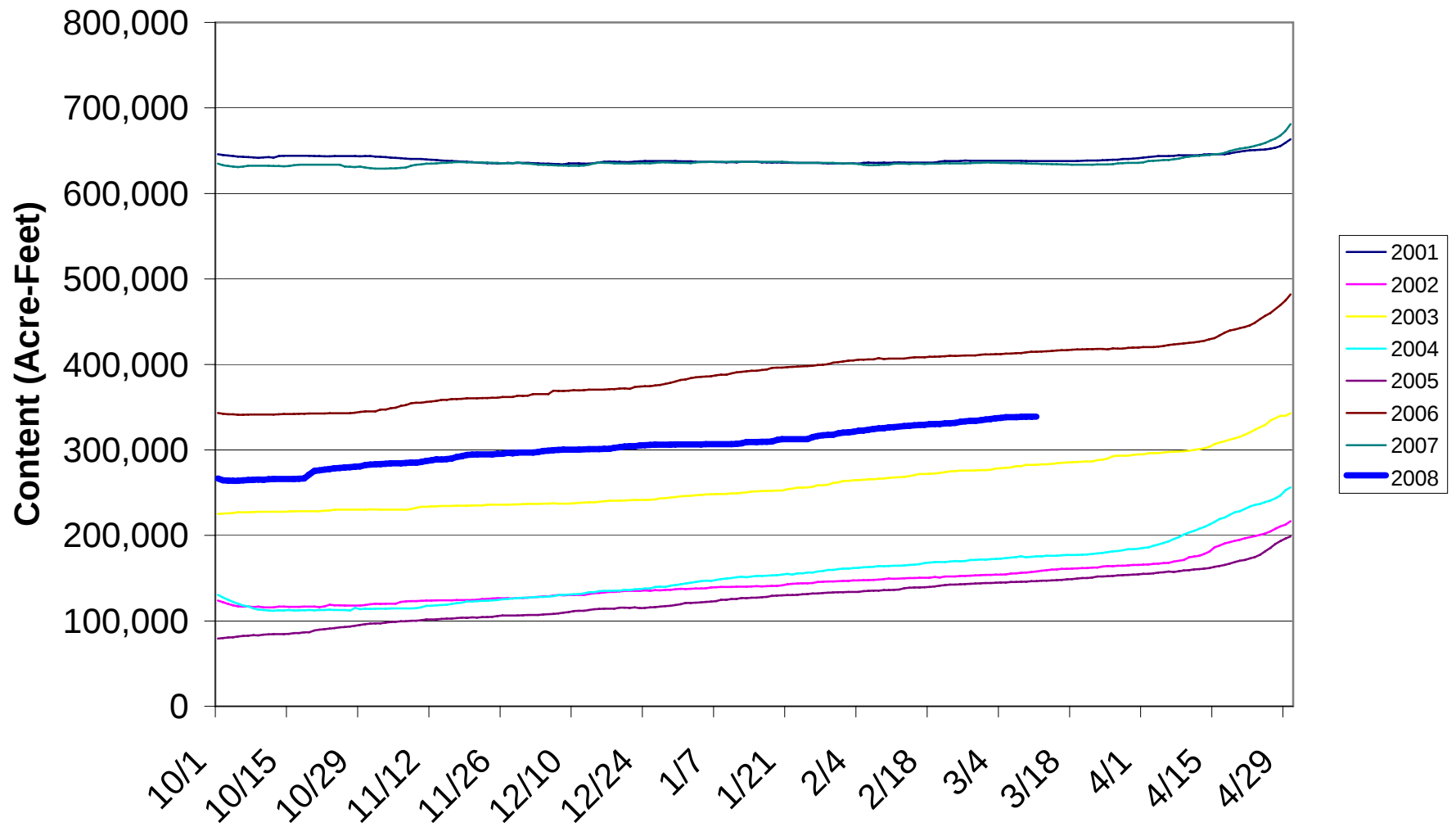
Palisades Reservoir



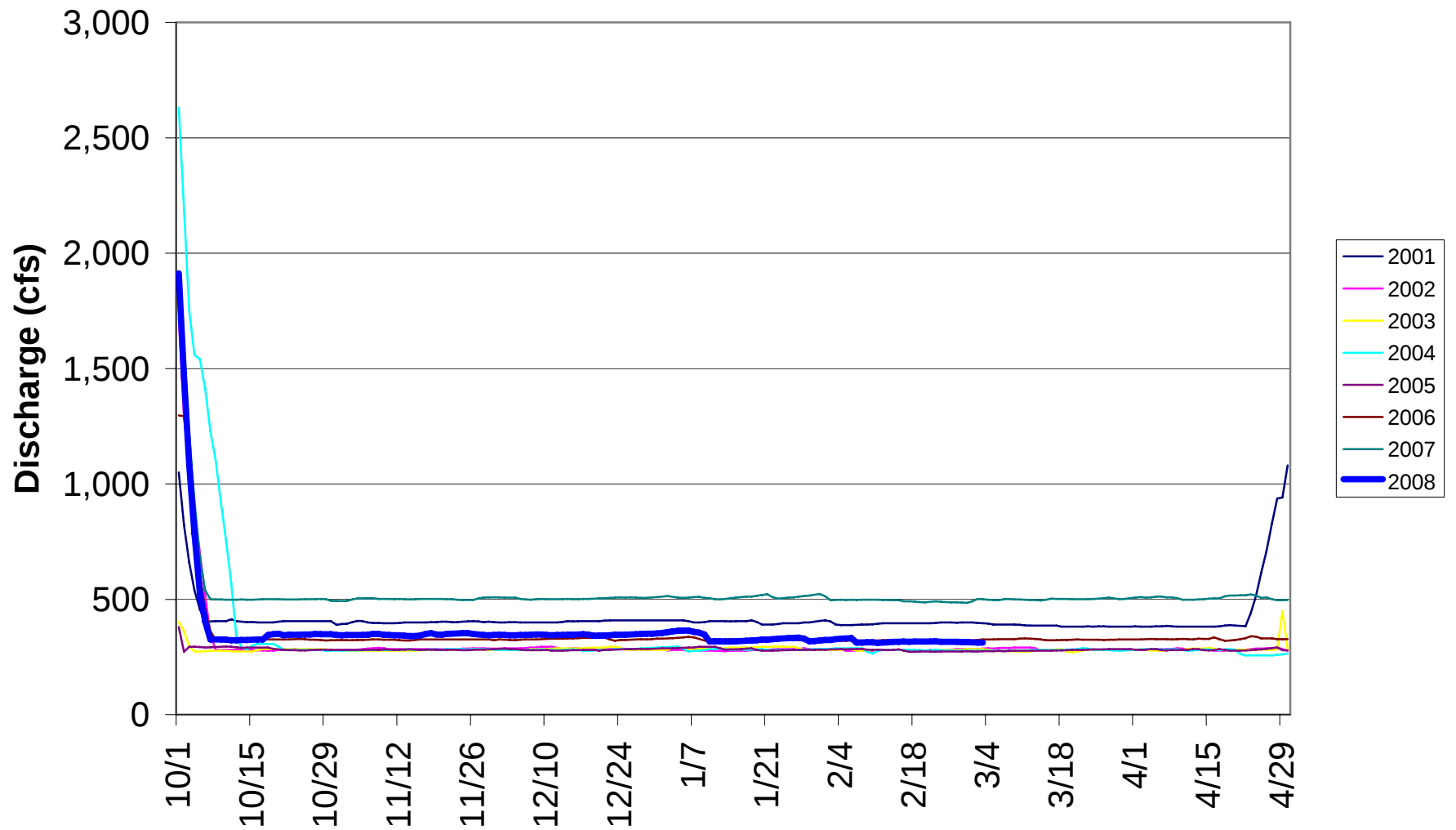
Snake River at Irwin



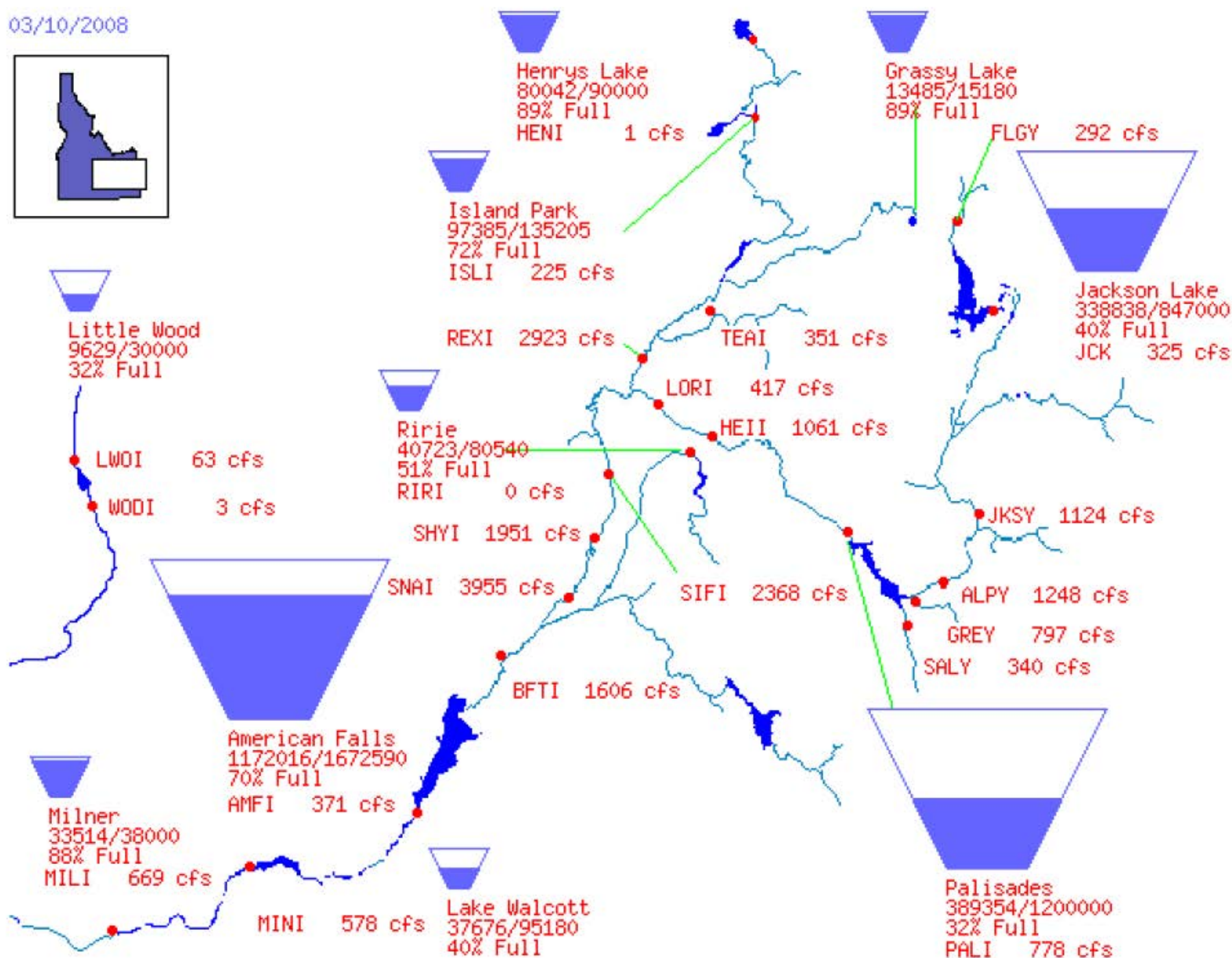
Jackson Lake



Snake River at Moran



03/10/2008

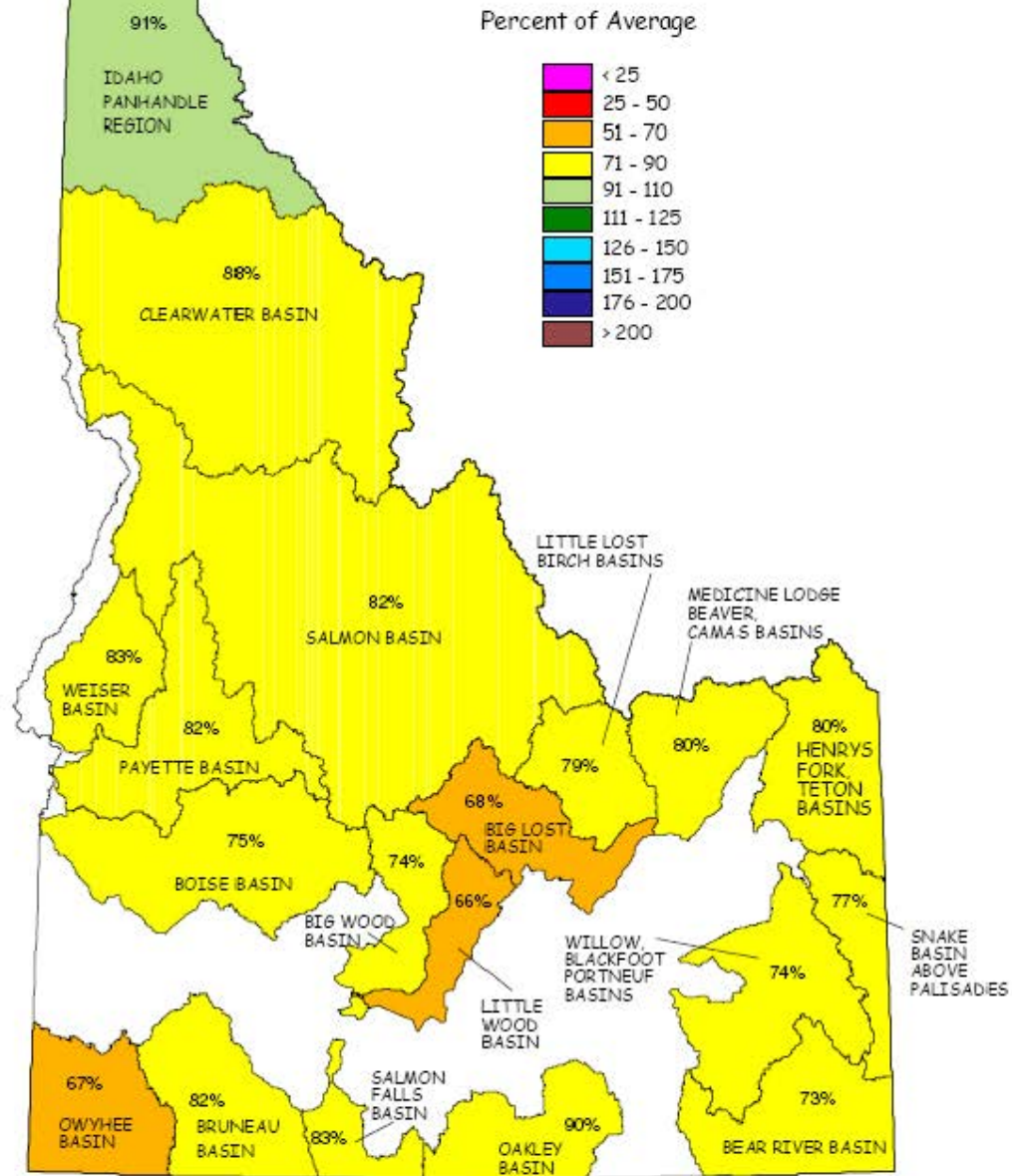




March 2008 Water Supply Committee

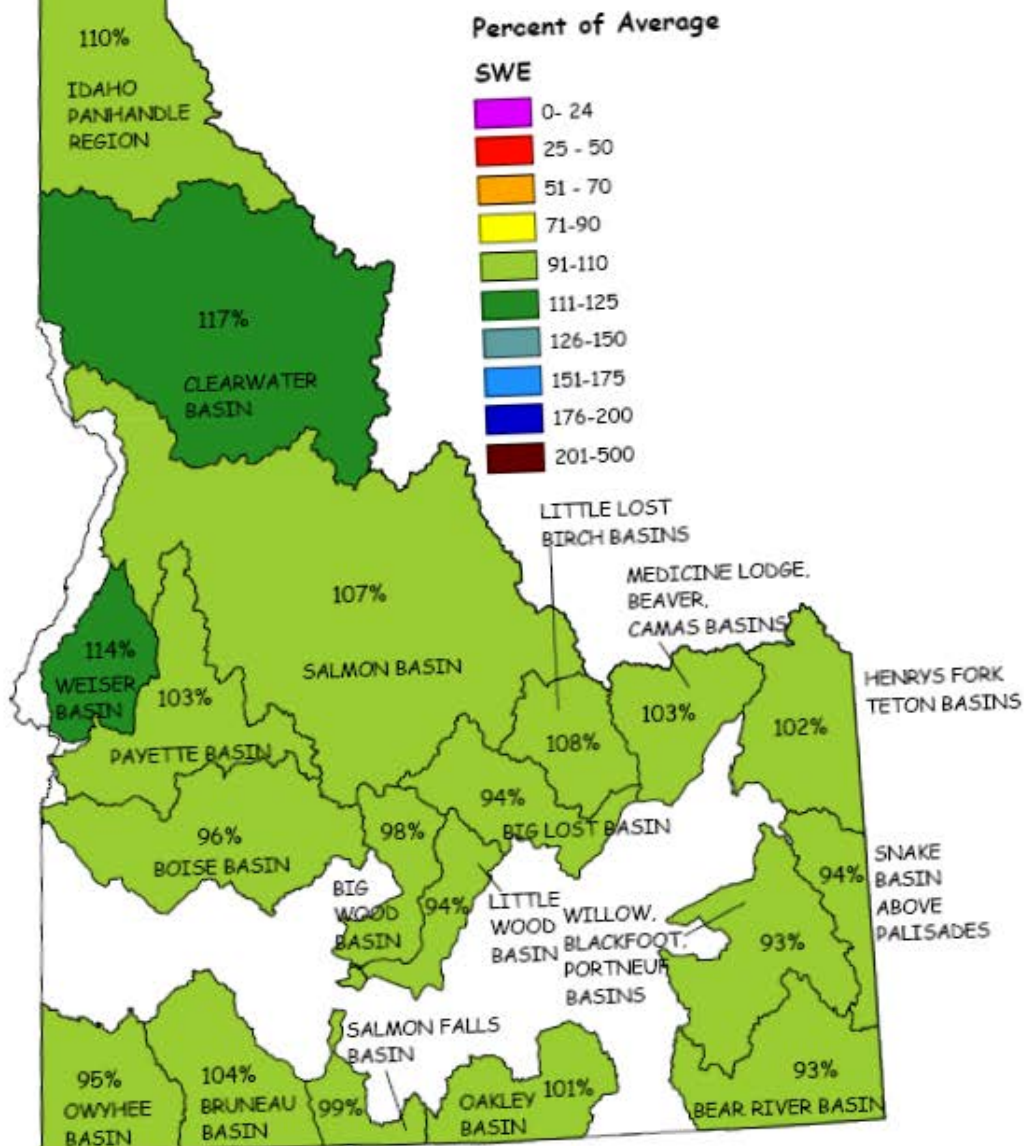


Mountain Snow Water Equivalent
As of Monday, March 12, 2007.
Idaho Snow Survey SNOTEL Data

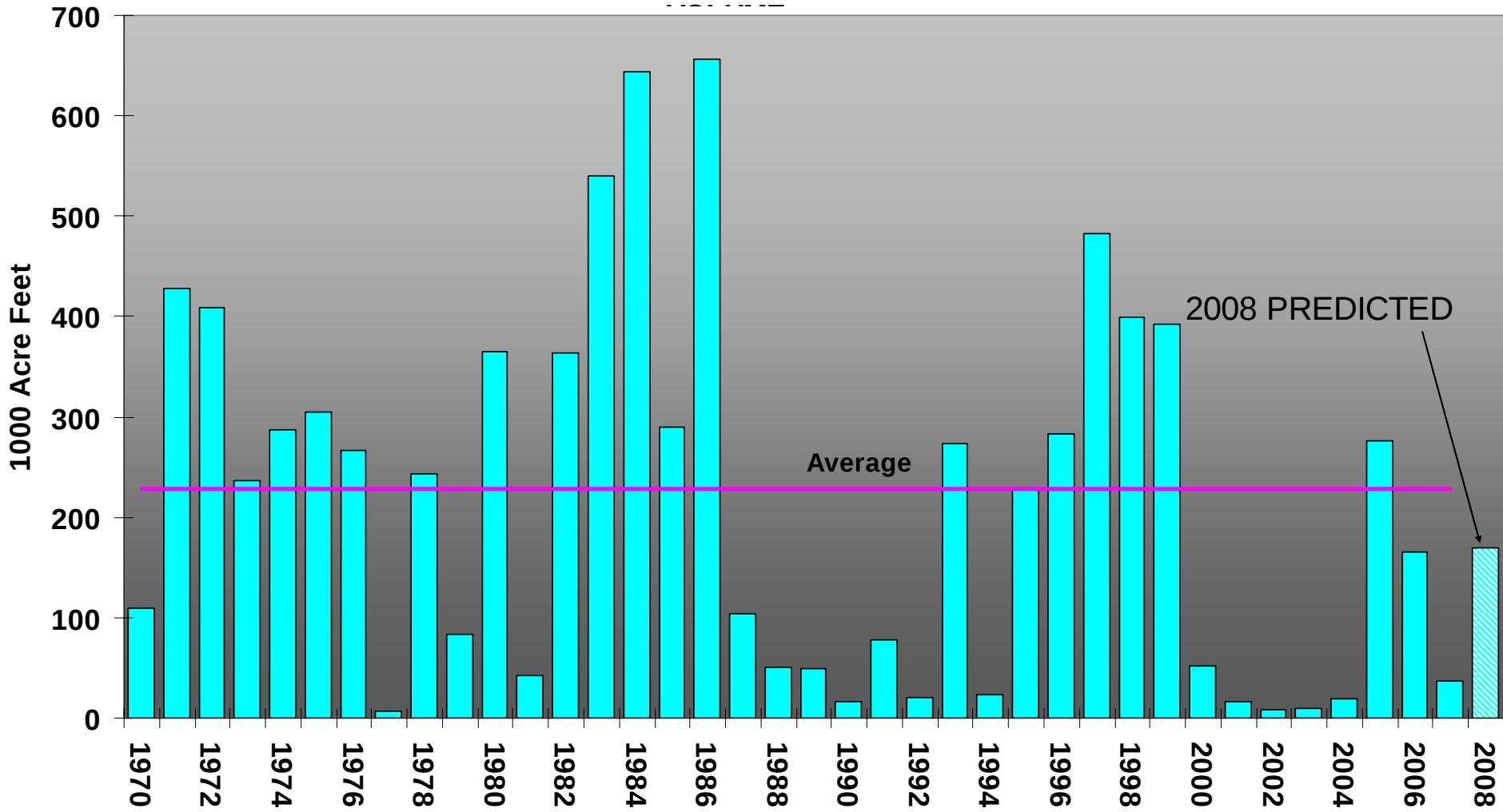


Mountain Snow Water Equivalent

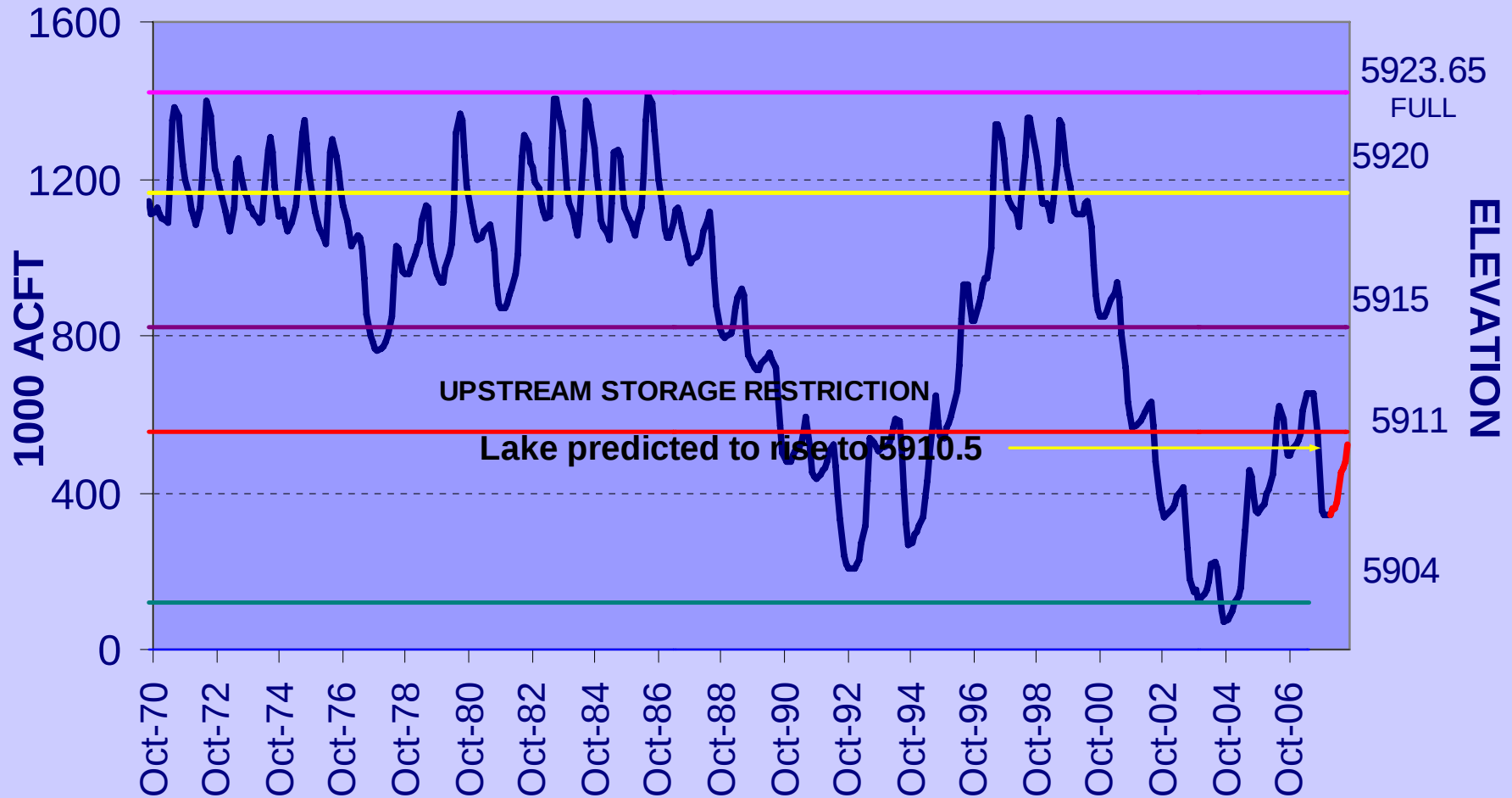
As of Monday, March 10, 2008.
Idaho Snow Survey SNOTEL Data



Bear Lake Inflow
APRIL THROUGH SEPTEMBER RAINBOW INLET CANAL

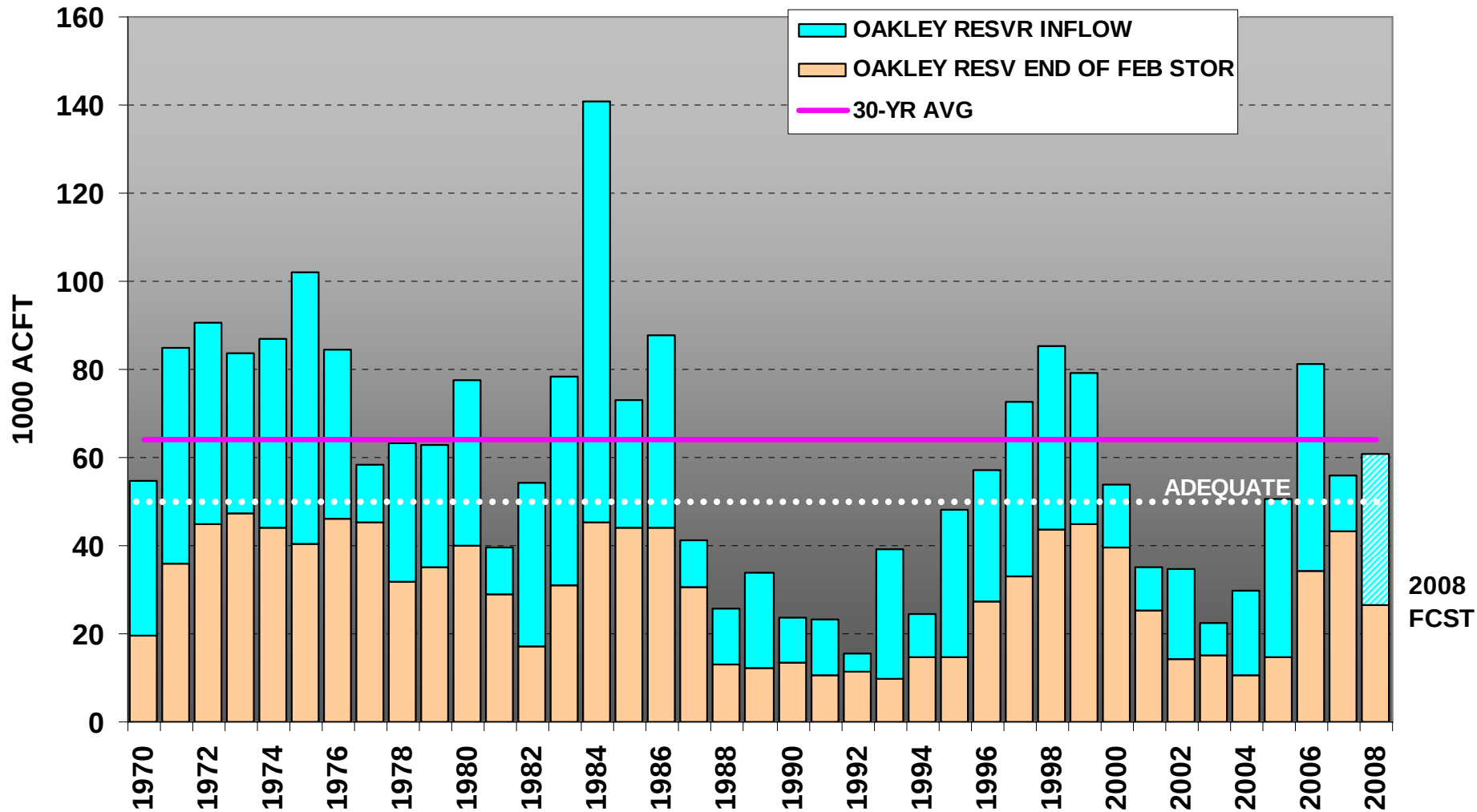


BEAR LAKE END OF MONTH STORAGE
WATER YEARS 1922-2007
UPDATED THRU Oct 2007

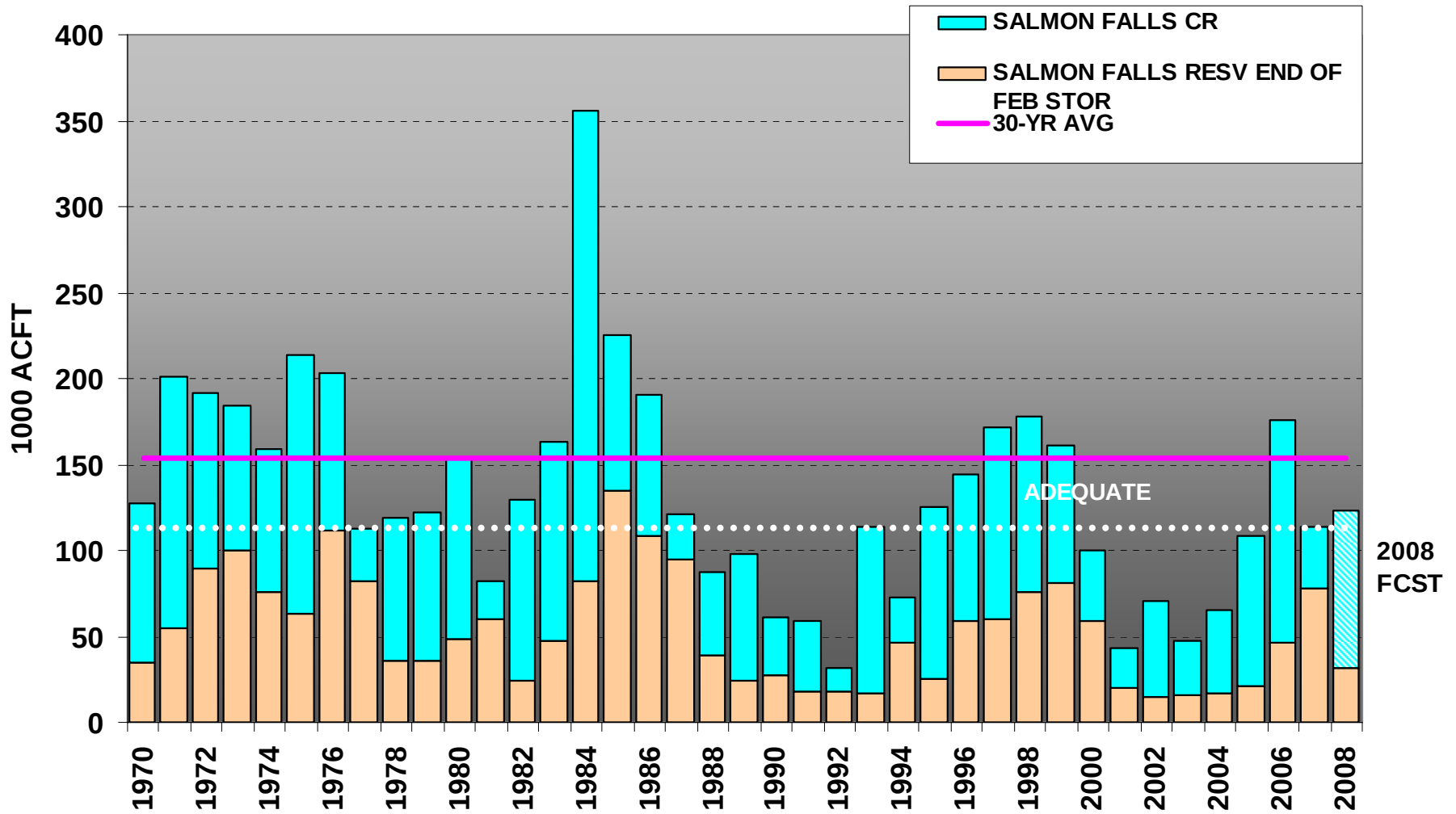


OAKLEY RESERVOIR INFLOW MARCH THROUGH SEPTEMBER VOLUME

END OF FEBRUARY STORAGE



**SALMON FALLS CREEK NR SAN JACINTO, NV
MARCH THROUGH SEPTEMBER VOLUME
+ SALMON FALLS RESERVOIR**

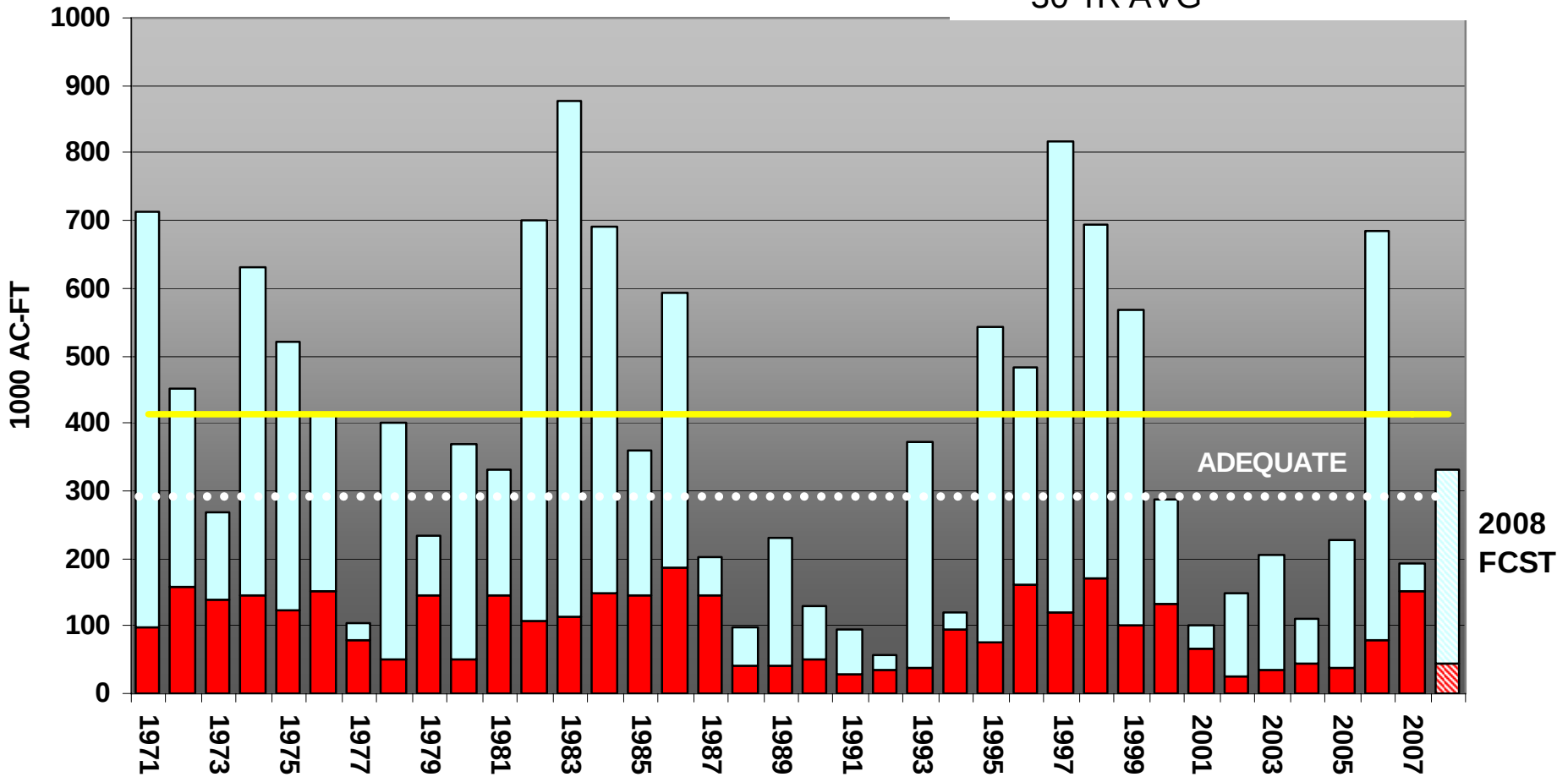


**BIG WOOD APR - SEP FLOW VOLUMES
MAGIC STORAGE MARCH 31**

MAGIC INFLOW

MAGIC RESERVOIR END OF
MAR STOR

30 YR AVG

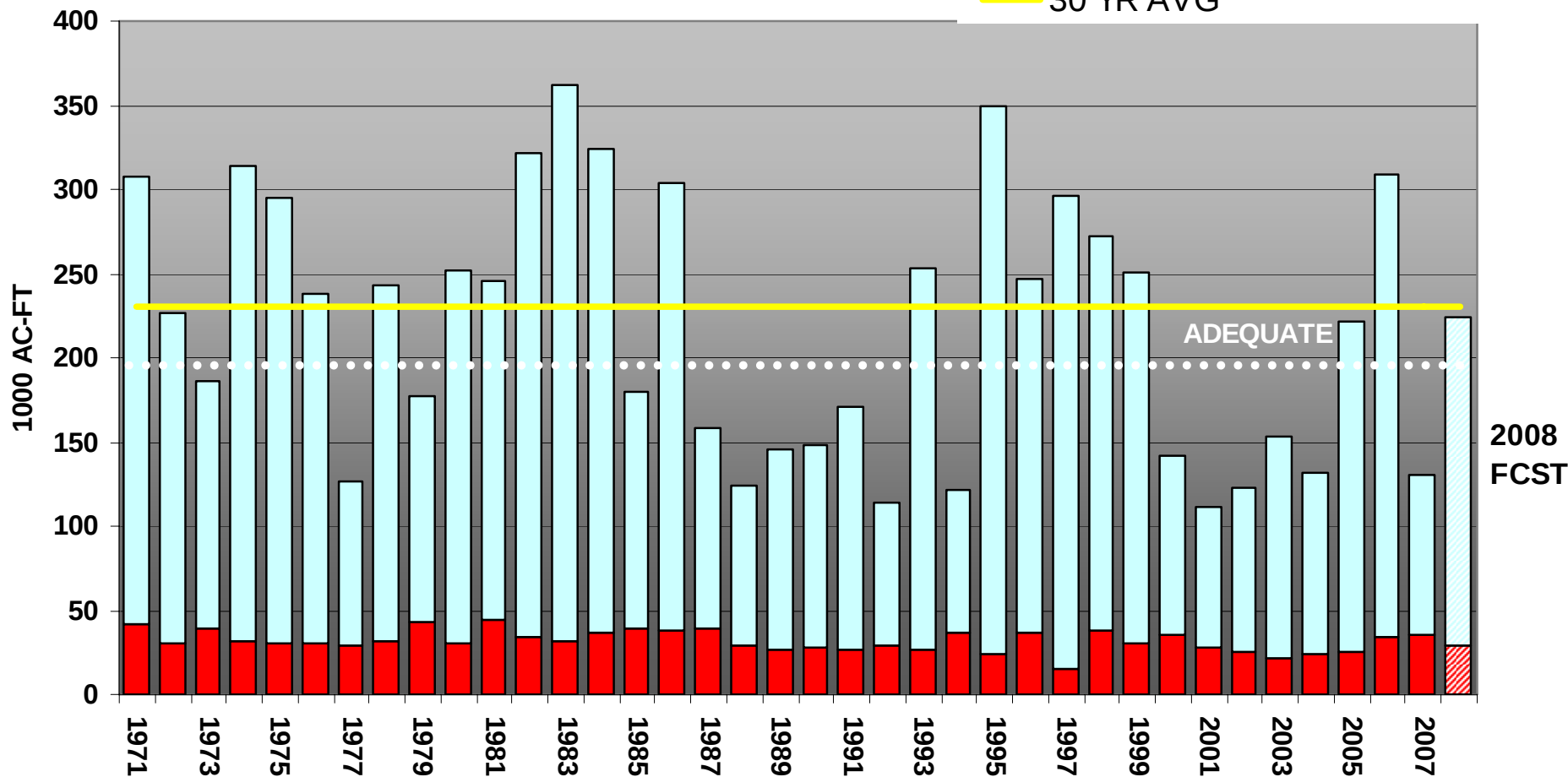


BIG LOST APR - SEP FLOW VOLUMES **MACKAY RESERVOIR END OF MARCH STORAGE**

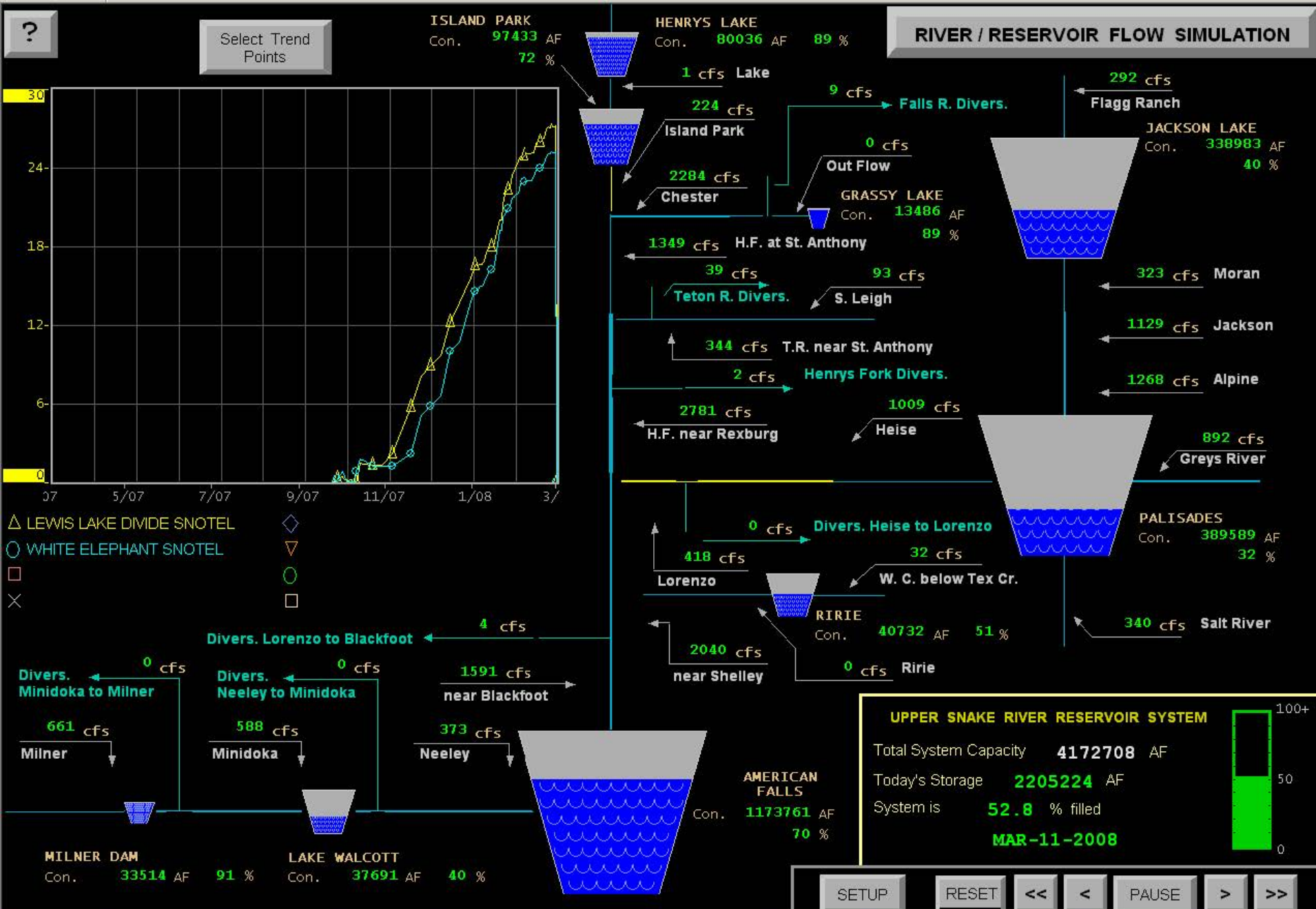
 BIG LOST AT HOWELL

 MACAKY RESERVOIR END
OF MAR STOR

 30 YR AVG



flow_sim



flow_sim

?

Select Trend Points

ISLAND PARK
Con. 83839 AF
62 %HENRYS LAKE
Con. 60359 AF
67 %

RIVER / RESERVOIR FLOW SIMULATION



△ LEWIS LAKE DIVIDE SNOTEL
○ WHITE ELEPHANT SNOTEL
□
×

◇
▽
○
□

Divers. Lorenzo to Blackfoot

0 cfs
1890 cfs
near Blackfoot

Divers. Neeley to Minidoka

525 cfs
Minidoka

MILNER DAM
Con. 33748 AF
91 %

LAKE WALCOTT
Con. 37993 AF
40 %

1069 cfs
Milner

301 cfs
Neeley

0 cfs
741 cfs
Lorenzo

0 cfs
2390 cfs
near Shelley

0 cfs
23396 AF
29 %
RIRIE

22 cfs
W. C. below Tex Cr.

0 cfs
Ririe

AMERICAN FALLS
Con. 1228120 AF
73 %

3 cfs Lake

145 cfs
Island Park

365 cfs
Chester

1090 cfs
H.F. at St. Anthony

11 cfs
Teton R. Divers.

170 cfs
S. Leigh

316 cfs
T.R. near St. Anthony

343 cfs
Henrys Fork Divers.

1440 cfs
H.F. near Rexburg

1630 cfs
Heise

265 cfs
Flagg Ranch

JACKSON LAKE
Con. 167902 AF
20 %

287 cfs
Moran

992 cfs
Jackson

1130 cfs
Alpine

127 cfs
Greys River

PALISADES
Con. 310539 AF
26 %

294 cfs
Salt River

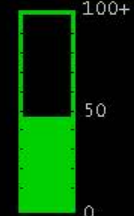
UPPER SNAKE RIVER RESERVOIR SYSTEM

Total System Capacity 4172708 AF

Today's Storage 1958878 AF

System is 46.9 % filled

MAR-11-1993



SETUP

RESET

<<

<

PAUSE

>

>>

ESPA GROUND WATER CURTAILMENT

	% of Normal Runoff	Comparable year	Heise Apr- Jul Runoff (1000 ac-ft)	Predicted Surface Water Supply Shortfall (ac-ft)	Acres Curtailed	Ground Water Right Priority Date Cut
	102	2006	3,621	0	0	none
2008 Projection:	100+/-	1993	3,500	0?	0?	?
	78	2005	2,643	27,700	0	27-Feb-79
	66	2007	1,923	486,000	482,449	19-Sep-60
	48	1977	1,177	720,000	703,074	4-Sep-50

**AVERAGE ANNUAL SPRING DISCHARGE TO SNAKE RIVER
BETWEEN MILNER AND KING HILL
1902-2007**

