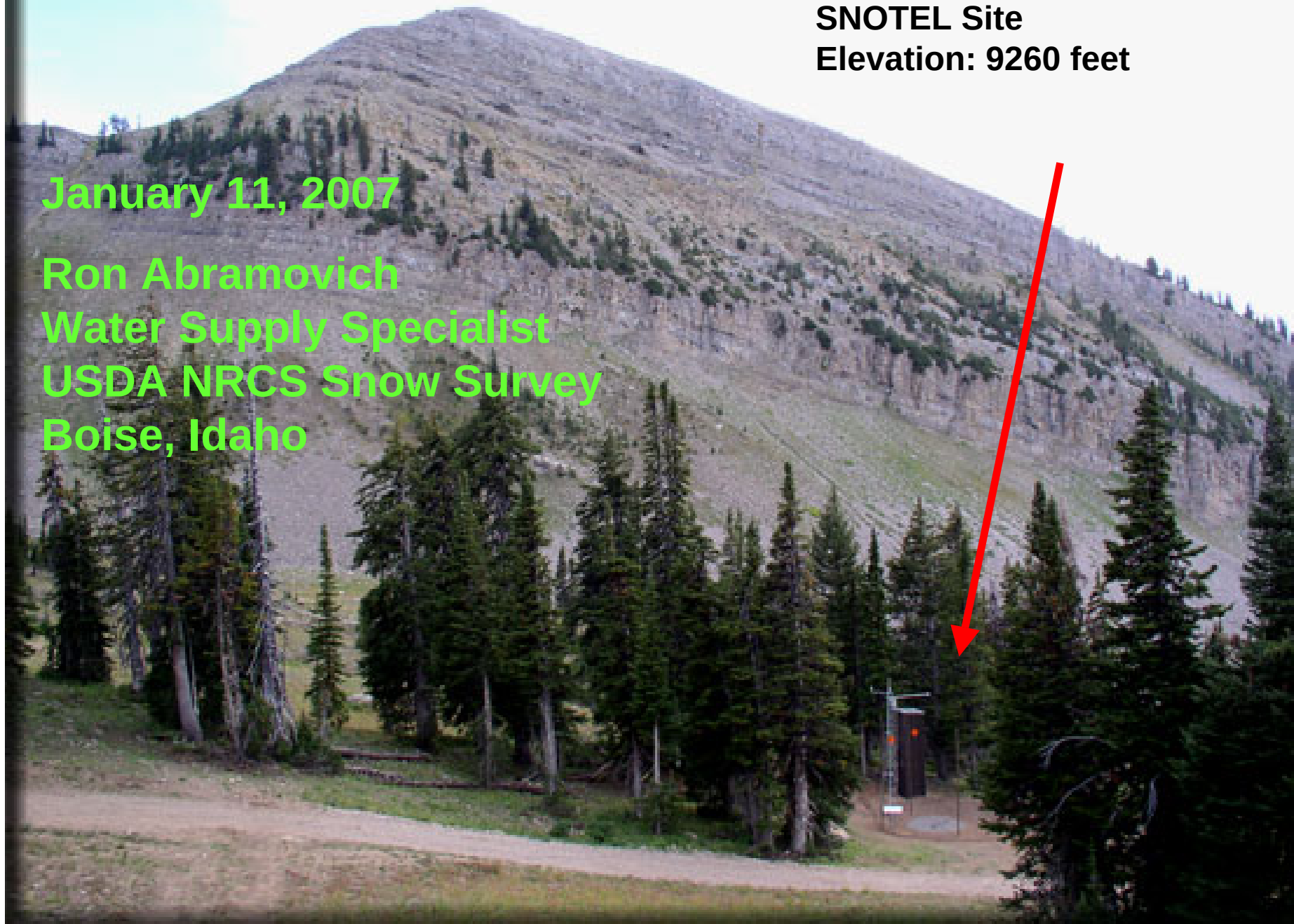


IDWR Water Supply Meeting

GRAND TARGHEE
SNOTEL Site
Elevation: 9260 feet

January 11, 2007

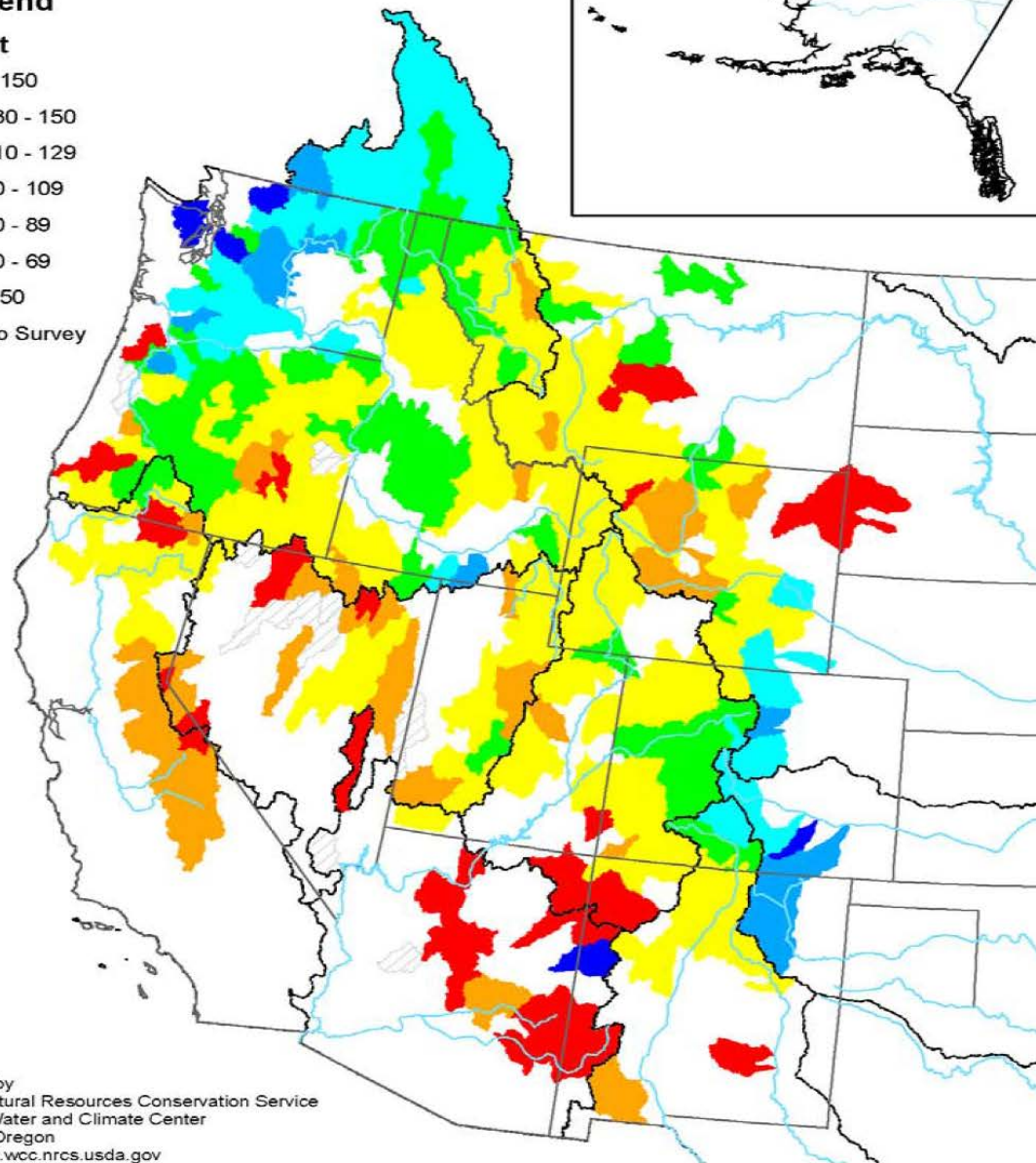
Ron Abramovich
Water Supply Specialist
USDA NRCS Snow Survey
Boise, Idaho



Mountain Snowpack as of January 1, 2007

Legend

percent



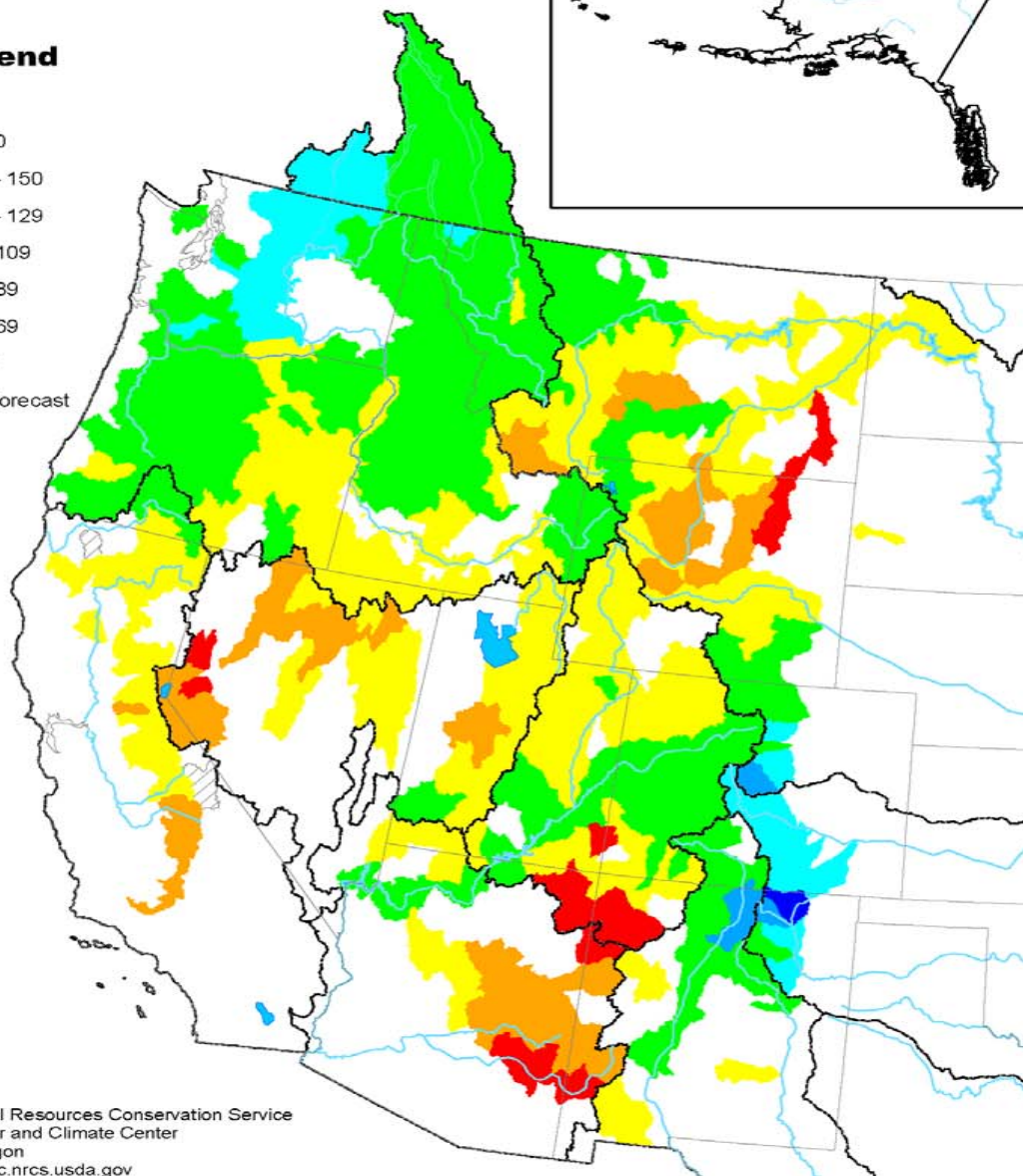
This
Year
2007

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

Spring and Summer Streamflow Forecasts as of January 1, 2007

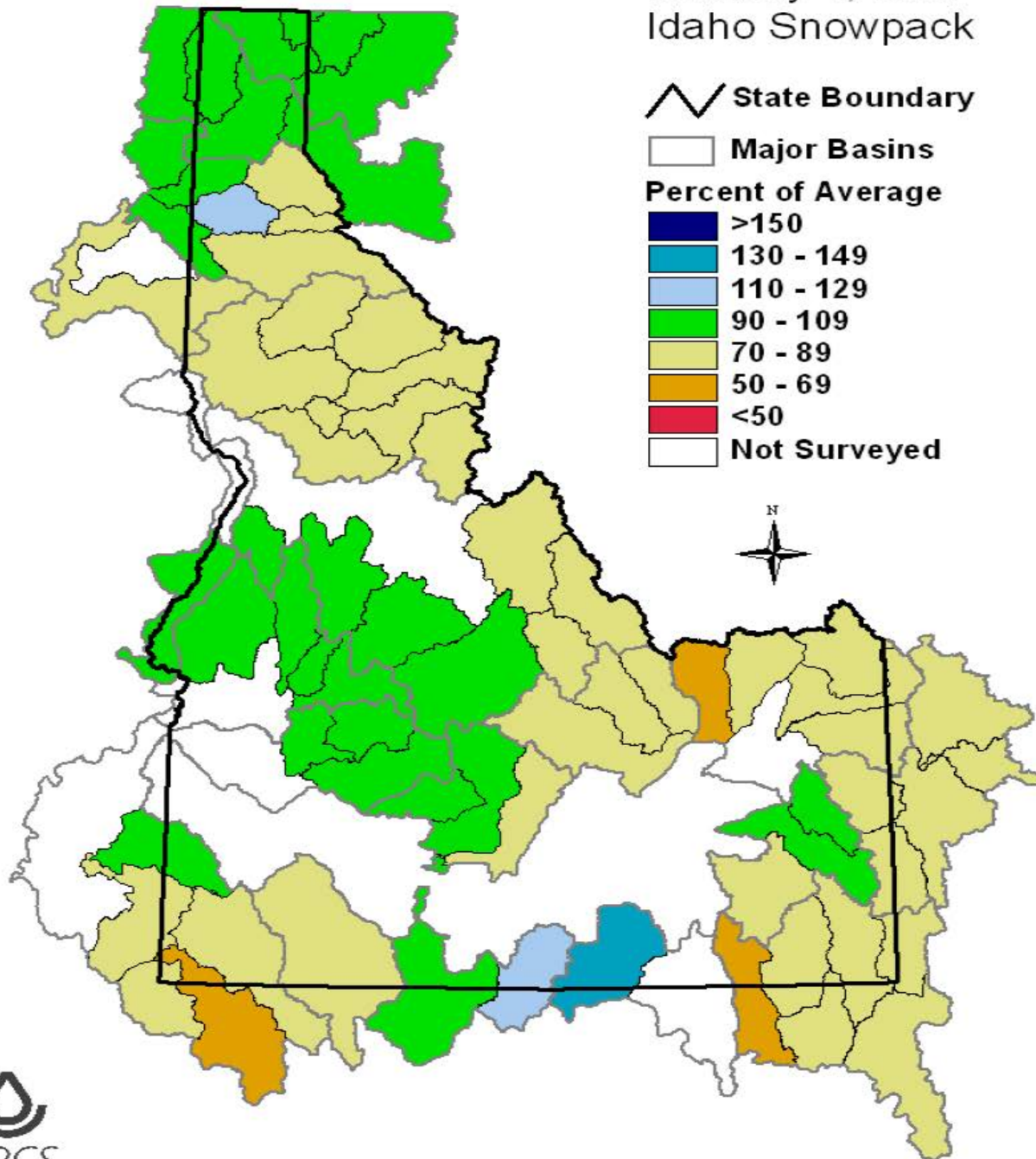
Legend

Percent

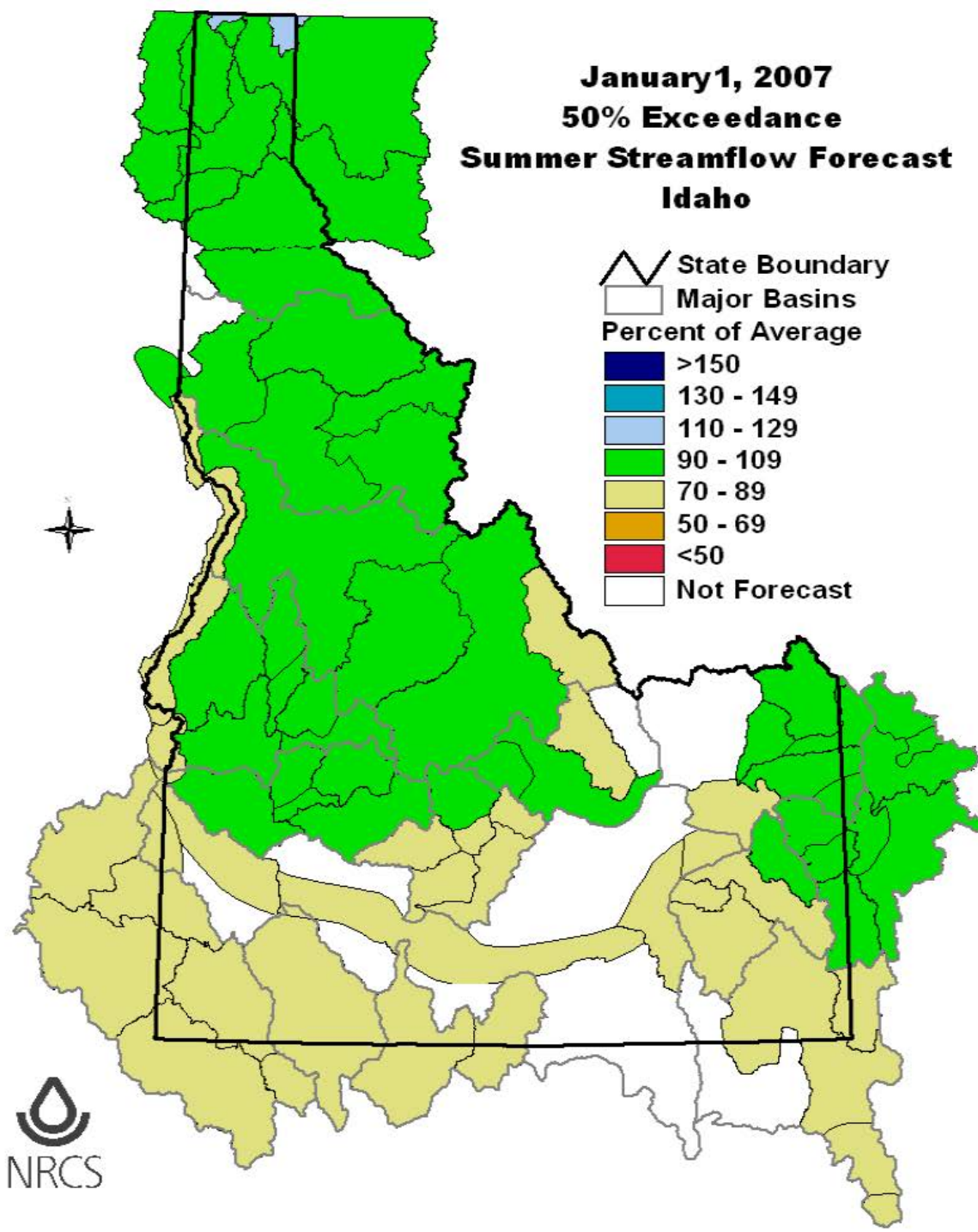


This
Year
2007

January 1, 2007
Idaho Snowpack



**January 1, 2007
50% Exceedance
Summer Streamflow Forecast
Idaho**



SNOTEL Snowpack Summary Report*for January 11, 2007*

Region or Basin	January 11, 2007 SWE as % of Average	January 11, 2007 SWE as % of Seasonal Peak
IDAHO PANHANDLE REGION	109	55
CLEARWATER BASIN	103	52
SALMON BASIN	98	46
WEISER BASIN	100	48
PAYETTE BASIN	102	48
BOISE BASIN	95	46
BIG WOOD BASIN	92	44
LITTLE WOOD BASIN	84	39
BIG LOST BASIN	80	37
LITTLE LOST, BIRCH BASINS	85	40
MEDICINE LODGE, BEAVER, CAMAS BASINS	85	40
HENRYS FORK, TETON BASINS	88	42
SNAKE BASIN ABOVE PALISADES	87	42
WILLOW, BLACKFOOT, PORTNEUF BASINS	84	40
OAKLEY BASIN	110	51
SALMON FALLS BASIN	93	43
BRUNEAU BASIN	84	40
OWYHEE BASIN	65	31
BEAR RIVER BASIN	76	35

IDAHO RESERVOIR STORAGE

Usable Contents

Reservoir or Basin	Percent of Capacity December 31, 2006	Percent of Average December 31, 2006	Percent of Average December 31, 2005
Bear Lake	37	58	41
Salmon Falls	40	138	69
Blackfoot	46	75	37
Mackay	49	92	99
Coeur d' Alene	49	106	117
Oakley	51	150	107
Magic	58	138	63
Boise (3)	58	105	83
Owyhee	63	113	119
American Falls	64	108	86
Payette (2)	68	108	97
Palisades & Jackson (2)	70	103	76
Little Wood	71	151	110
Dworshak	75	117	103

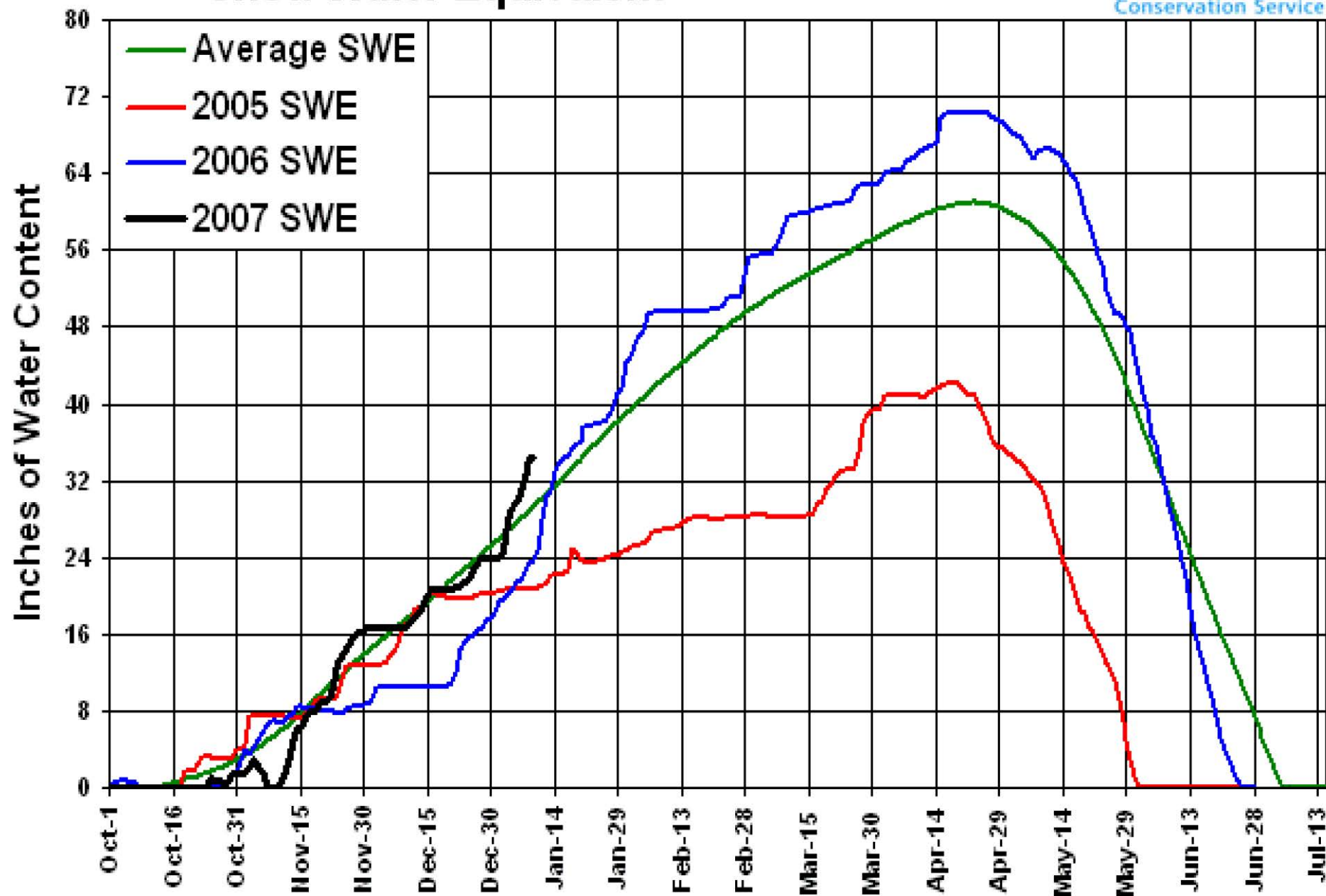
Idaho Surface Water Supply Index (SWSI)

As of January 1, 2007

BASIN or/ REGION	SWSI Value	Recent Years With Similar SWSI Value	Agricultural Water Supply Shortage May Occur When SWSI is Less Than
PANHANDLE	-1.1	1981	NA
CLEARWATER	-1.3	2003	NA
SALMON	0.2	1998	NA
WEISER	0.2	2002	NA
PAYETTE	0.0	1980/1981	NA
BOISE	0.2	1993	-2.1
BIG WOOD	-0.2	2000	-0.5
LITTLE WOOD	0.5	1996	-2.0
BIG LOST	0.0	1993	-0.5
LITTLE LOST	0.5	1980/1981	0.0
HENRYS FORK	-0.1	1989	-3.3
SNAKE –Heise	0.0	1995	-1.8
OAKLEY	1.1	1997	-1.0
SALMON FALLS	0.9	1999	-1.0
BRUNEAU	-1.1	2004	NA
BEAR RIVER	-1.7	2002	-2.9

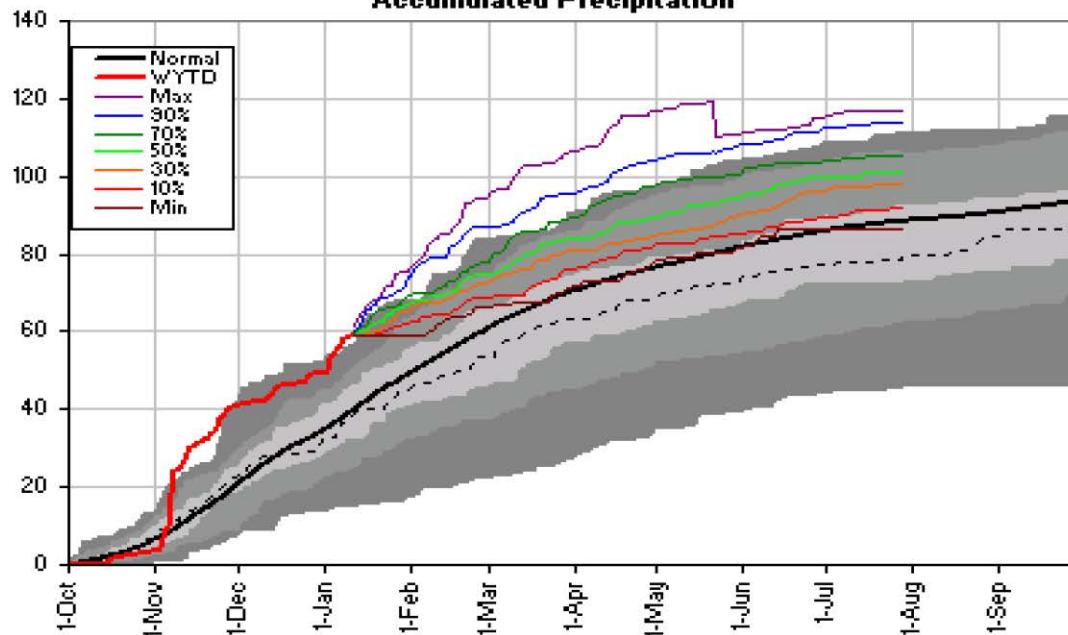
Bear Mountain SNOTEL El. 5400

Snow Water Equivalent

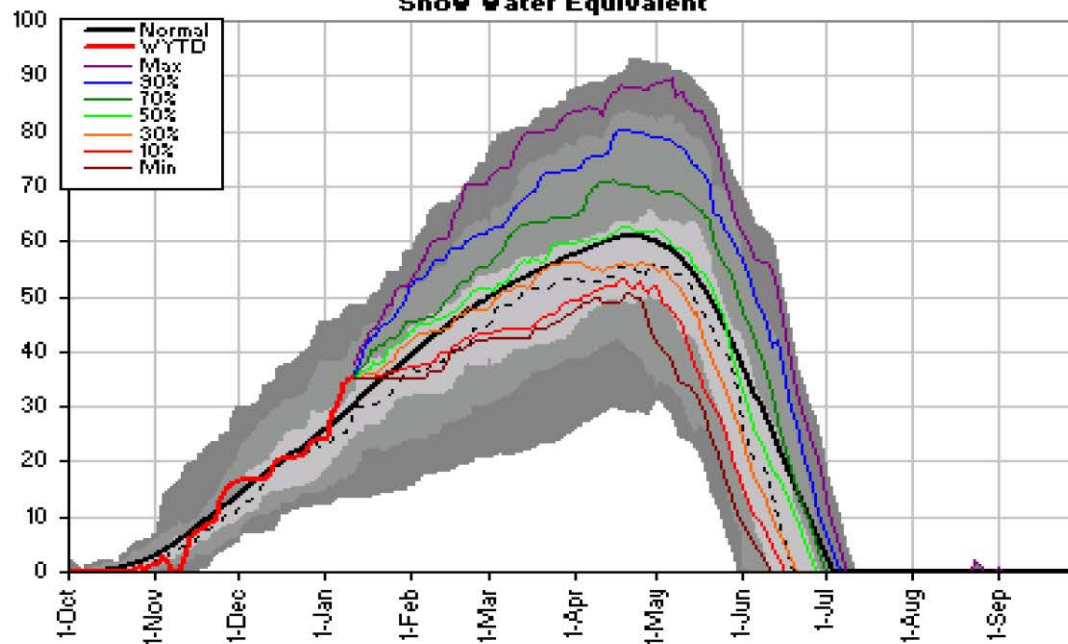


Bear Mountain (16a08s)

Accumulated Precipitation

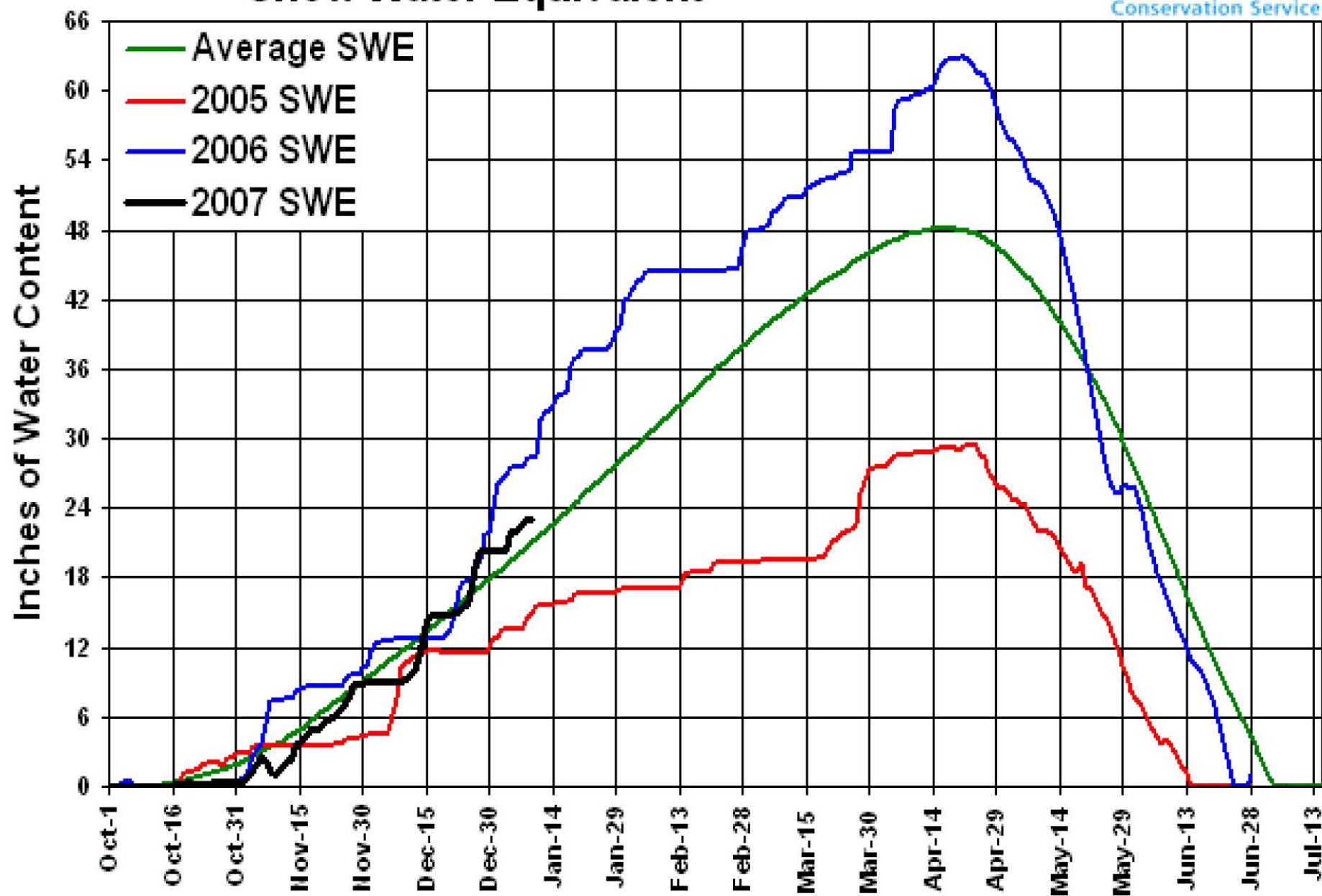


Snow Water Equivalent



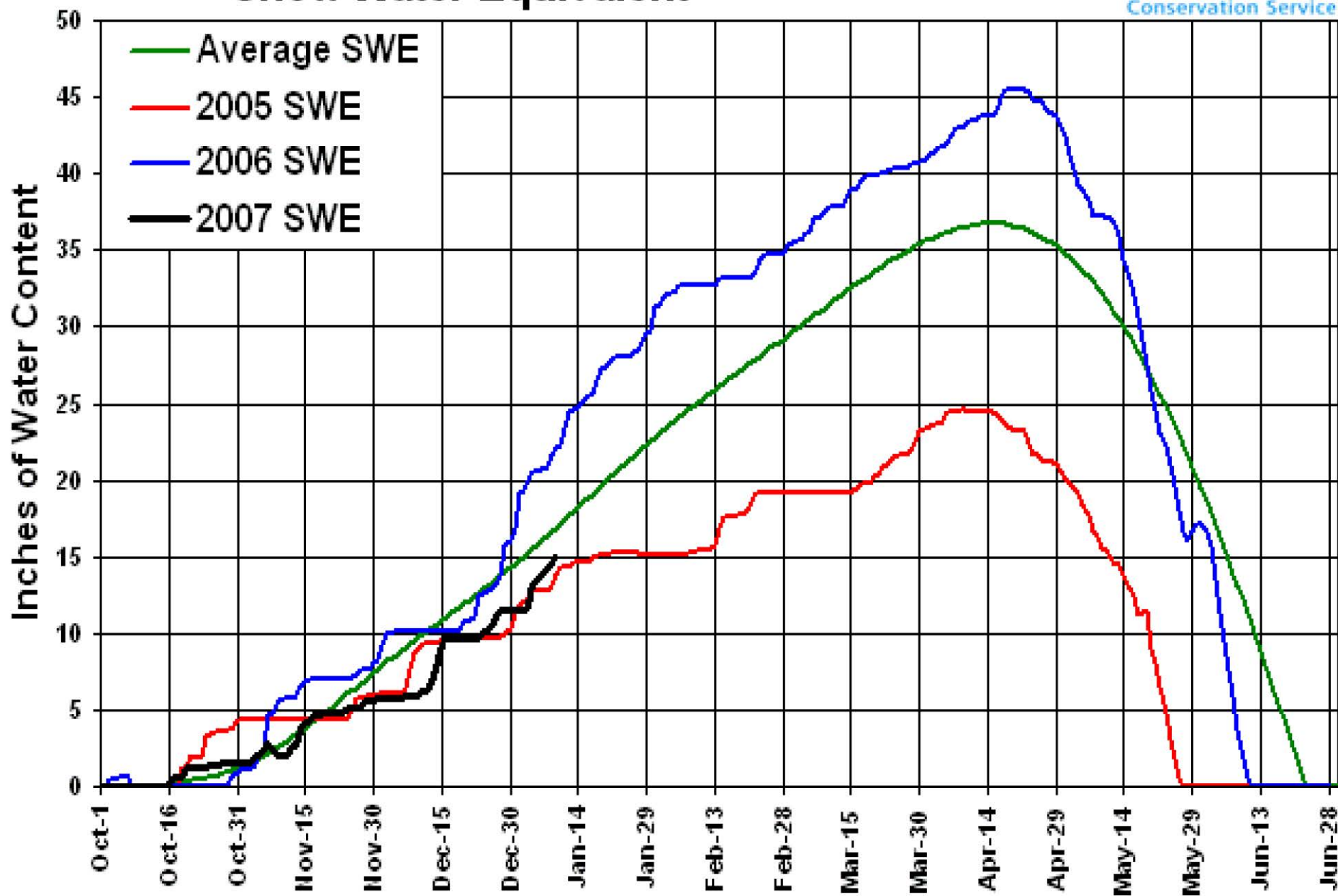
Deadwood Summit SNOTEL EI. 6860

Snow Water Equivalent

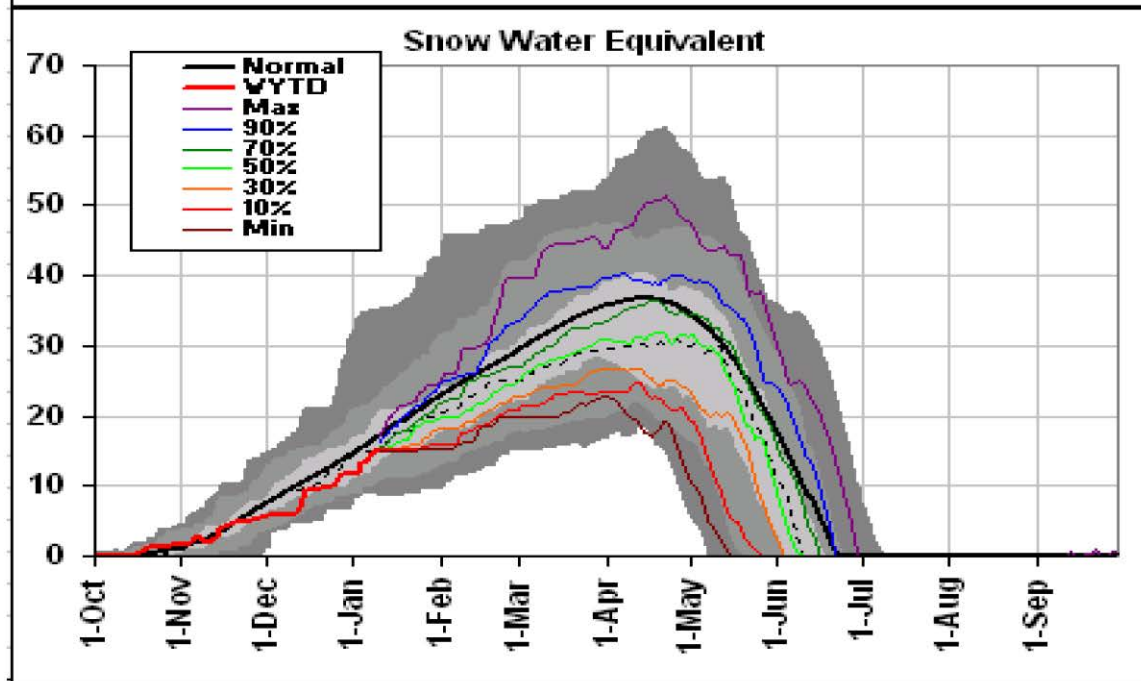
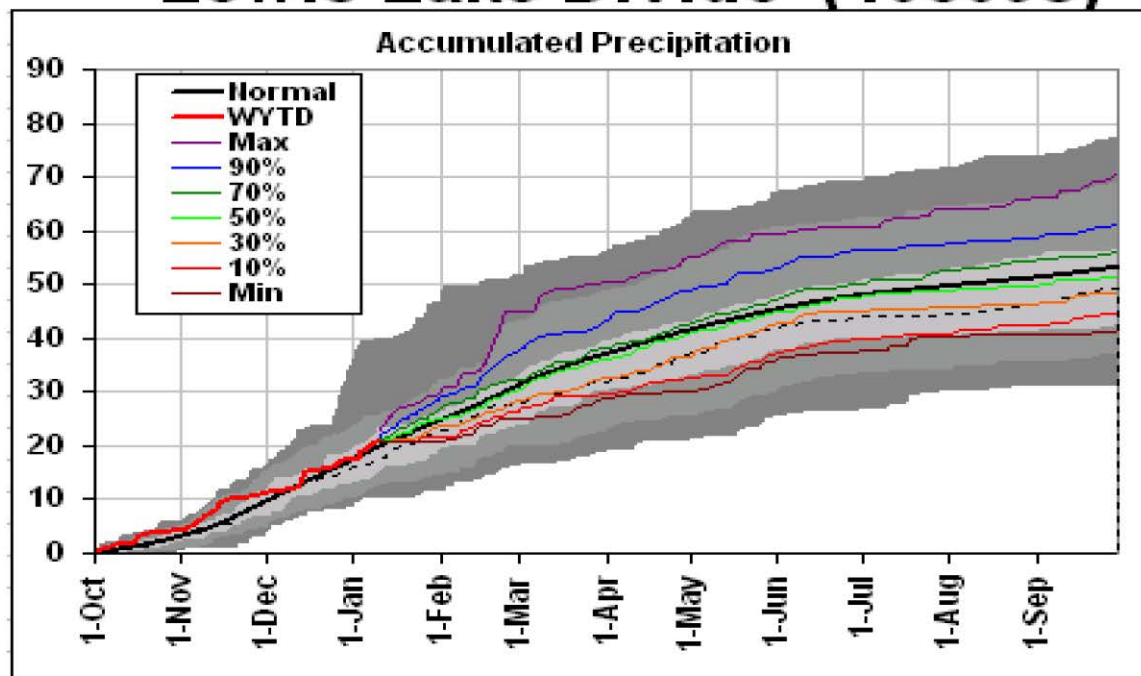


Lewis Lake Divide SNOTEL EI. 7850

Snow Water Equivalent

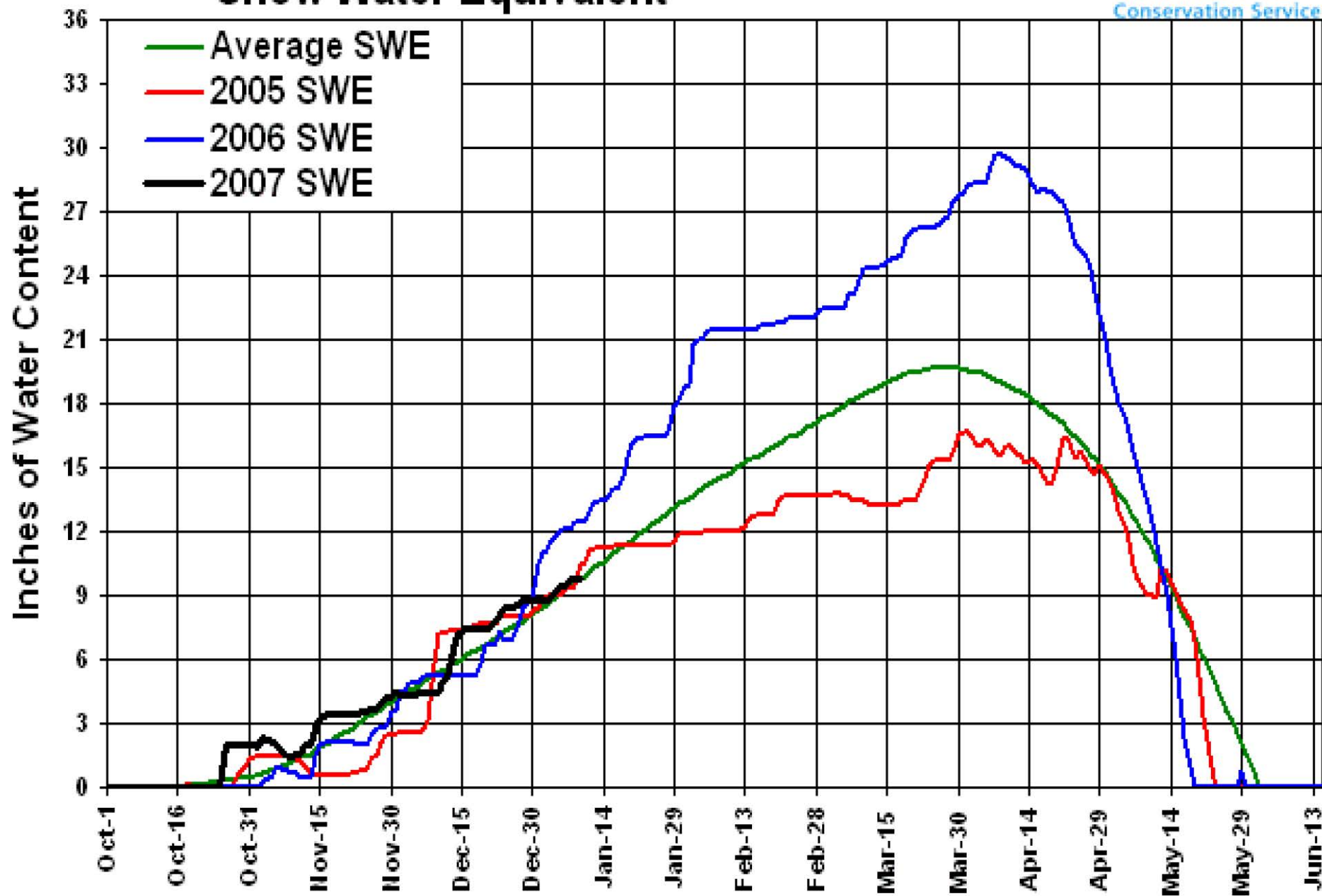


Lewis Lake Divide (10e09s)



Magic Mountain SNOTEL El. 6880

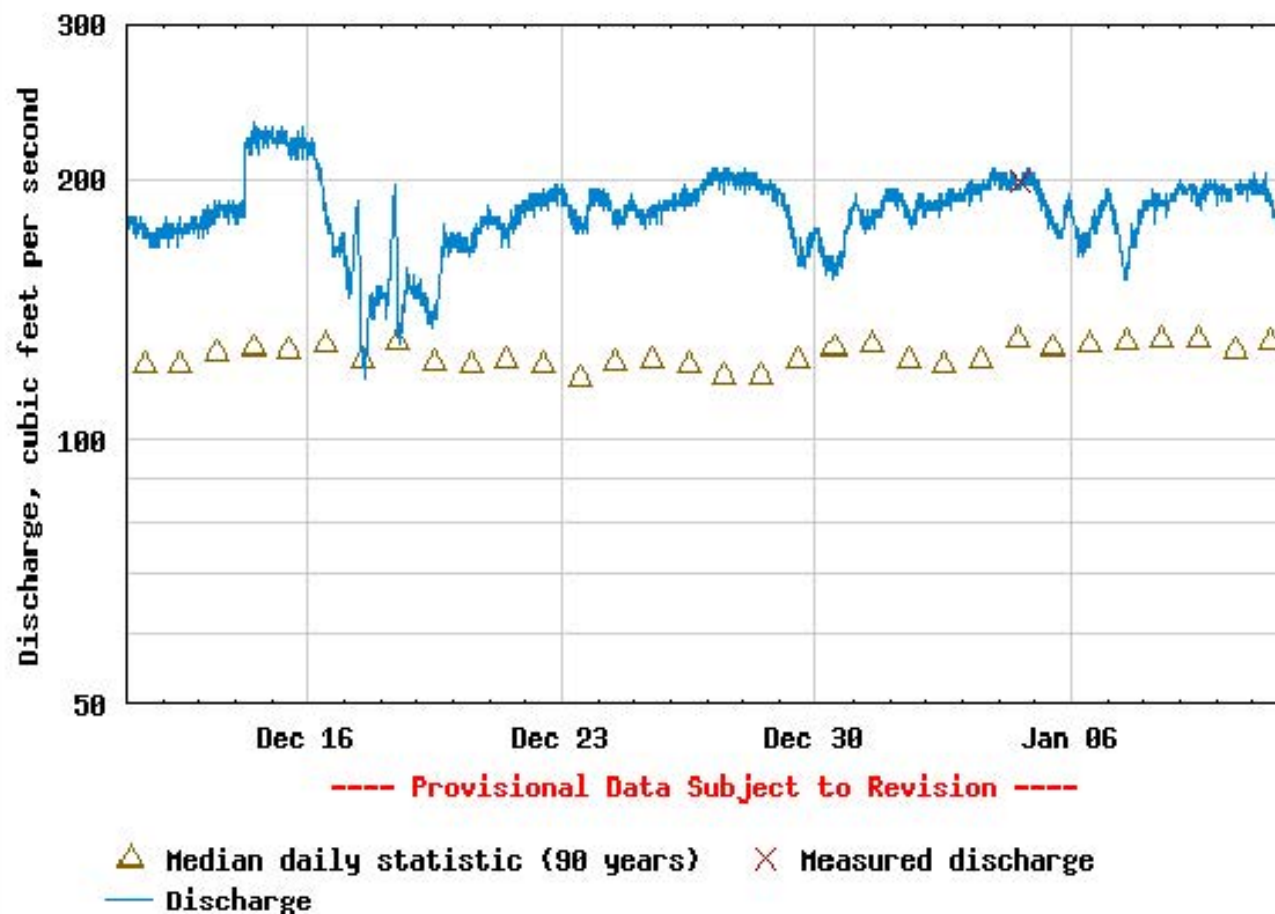
Snow Water Equivalent



Big Wood Basin --- Baseflows are above average, system seems primed. If snowpack is 60-100% of average look for similar 1:1 relationship between snow and flow. Unlike in Drought years like 2003 when we saw snow at 95%, stream at 46% (probably won't happen this year!)



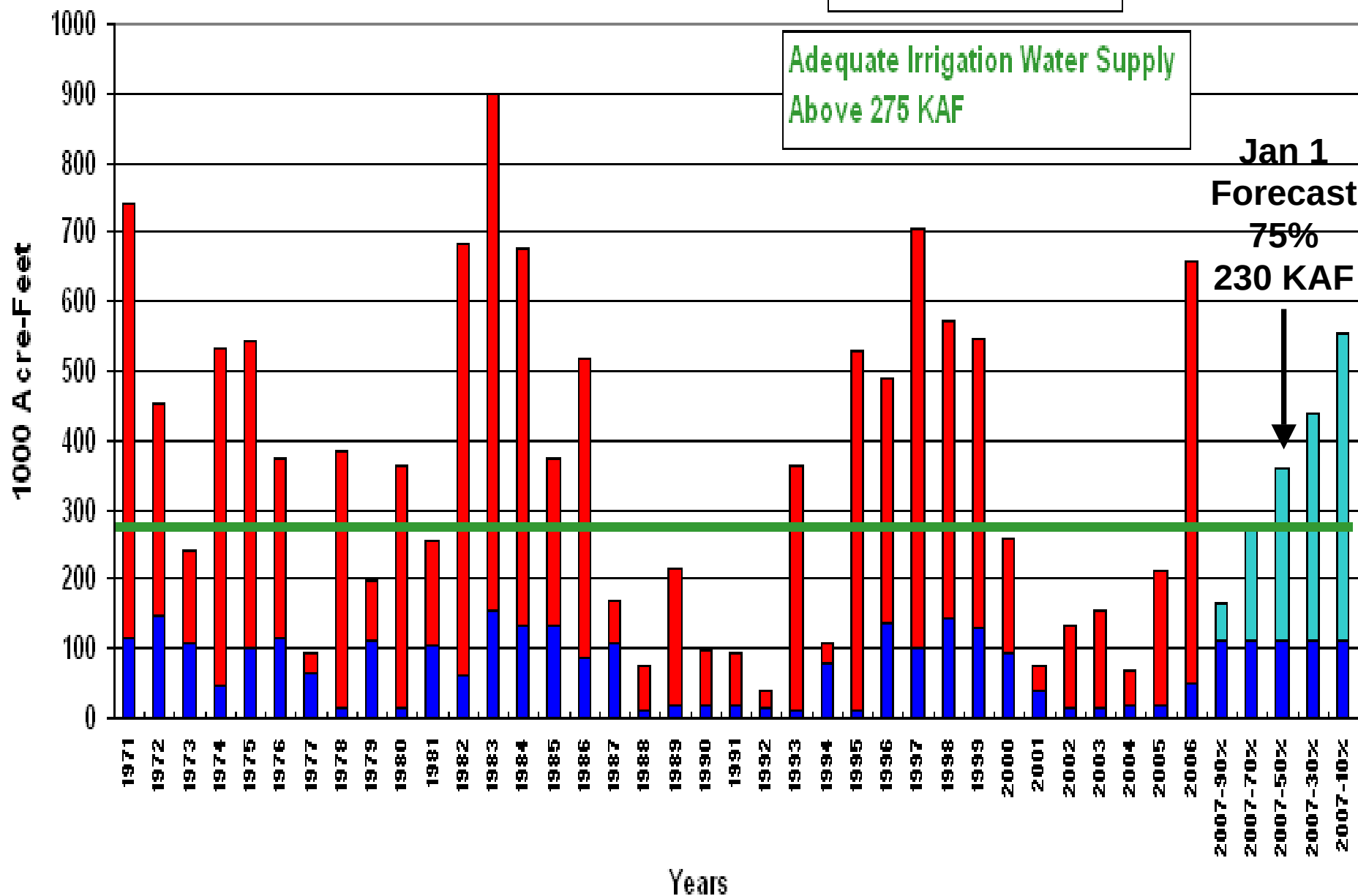
USGS 13139500 BIG WOOD RIVER AT HAILEY ID



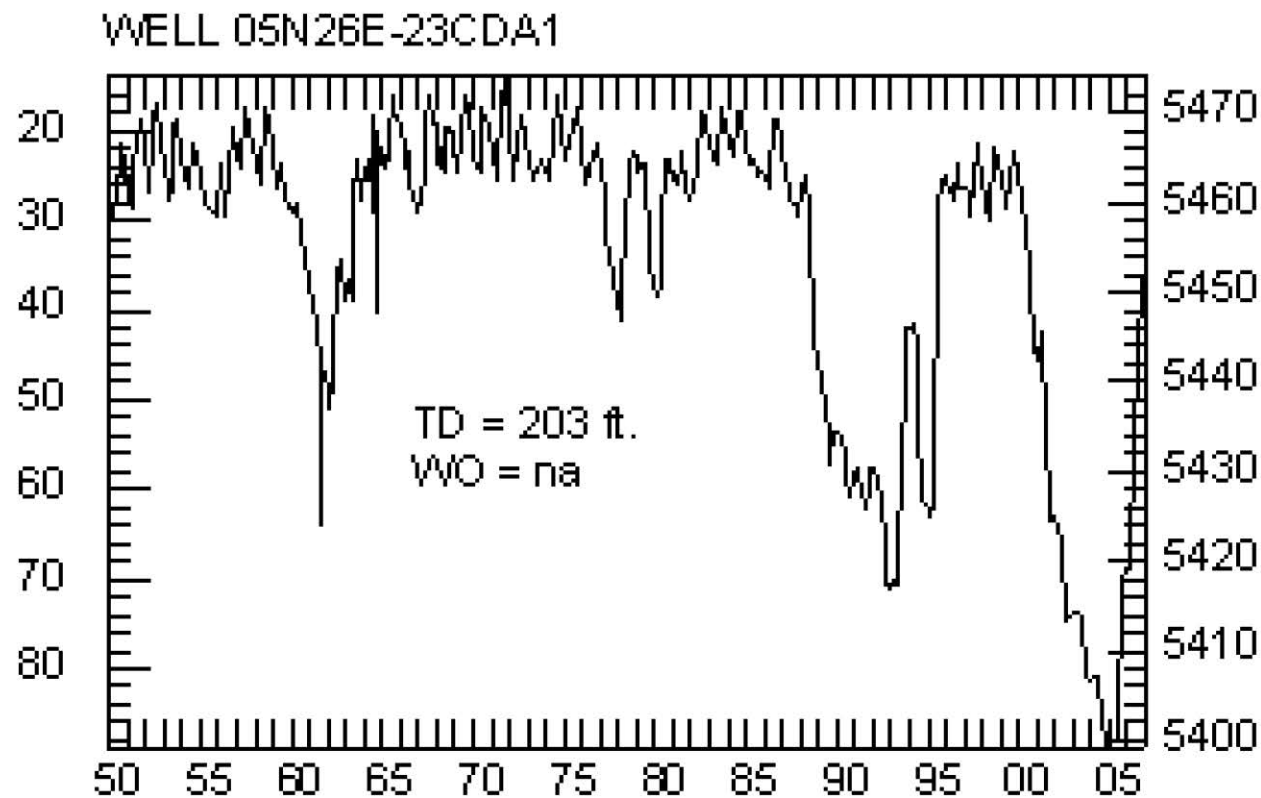
January 1 Big Wood Surface Water Supply Index (SWSI)

Big Wood River below Magic & Magic Reservoir

■ Streamflow Apr-Sep
■ Reservoir 31-Dec



Big Lost Basin --- Groundwater levels up 50 feet in at least one well and should mean the system is primed again and offer another level of insurance if snow and runoff are low. Look for a similar 1:1 relationship between snow and flow. Unlike 2004, when snow was 75% and flow were 39%.

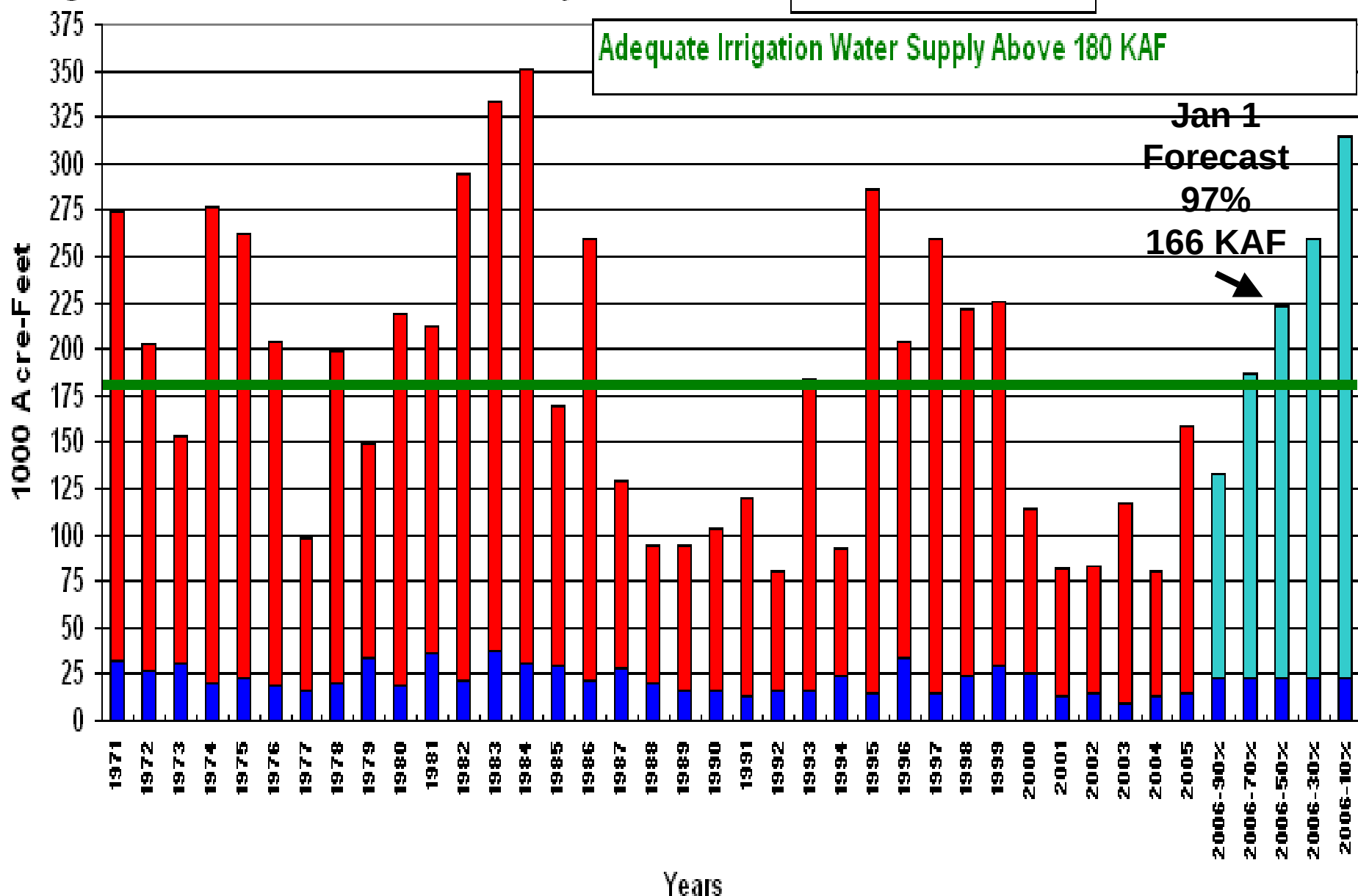


January 1 Big Lost Surface Water Supply Index (SWSI)

Big Lost River below Reservoir & Mackay Reservoir

Streamflow Apr-Sep

Reservoir 31-Dec

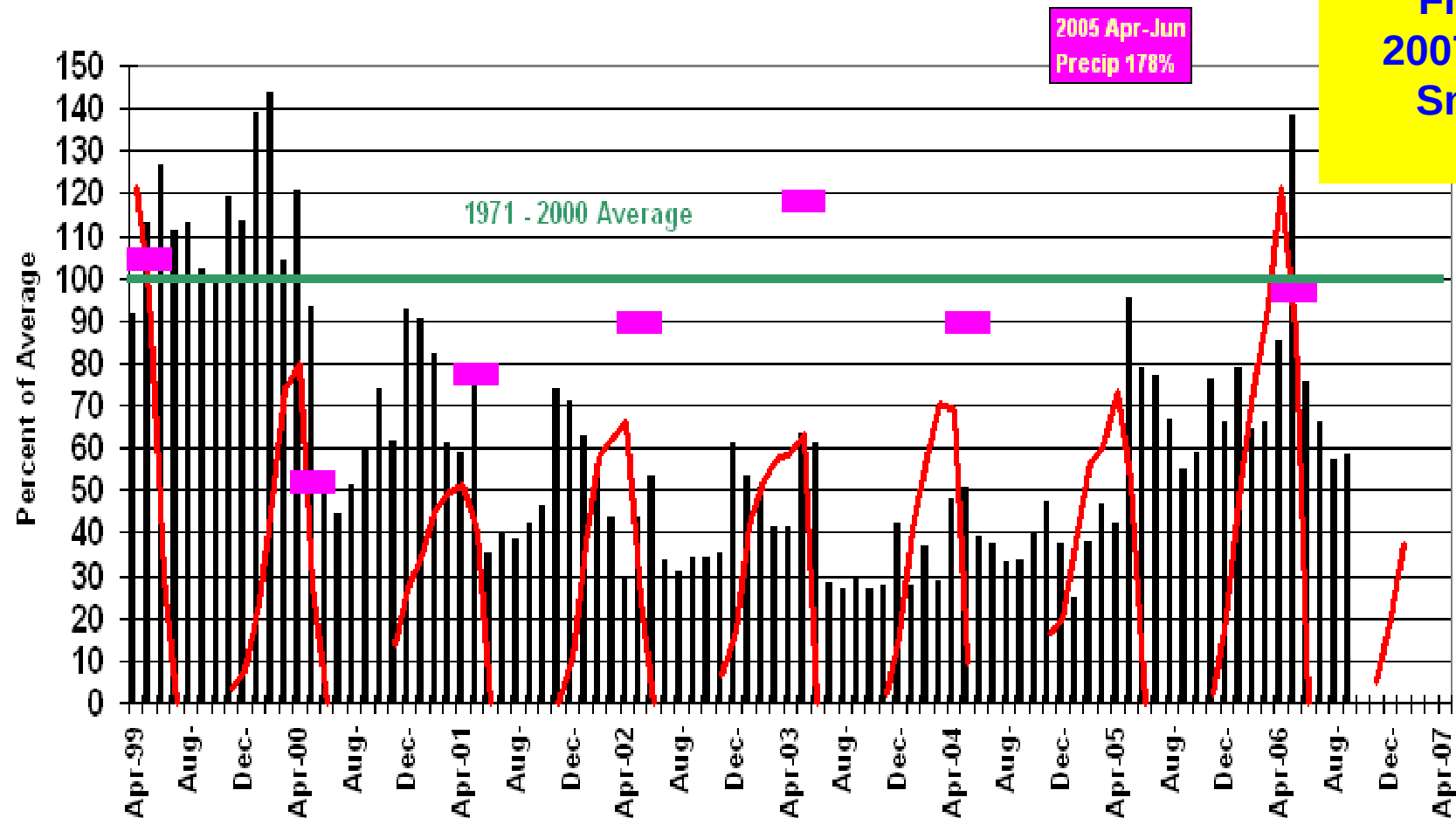


Signs of Long Term Drought in Little Lost Basin

- Only 1 month of above average flow since April 2000
- Annual Flow below average since 1999
- 8 Year Total Flow lowest since 1959 when records start

Little Lost Basin: Little Lost River below Wet Creek Monthly Streamflow
2 Station SNOTEL Site **Snow Index** and **Precipitation Index**

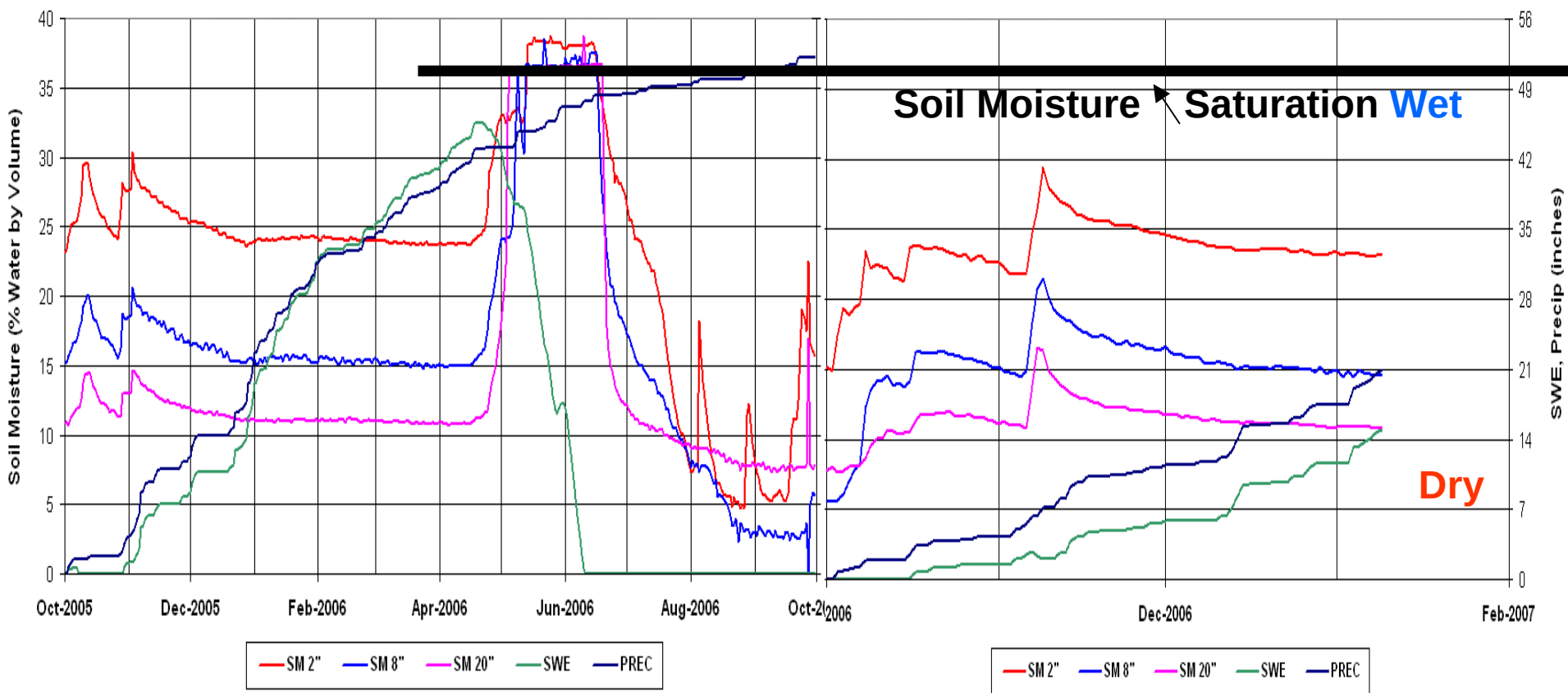
■ Monthly Streamflow as % of Average
— 1st of Month Snowpack as % of April 1 Peak
■ Apr-Jun Precipitation as % of Average



2006
Snow 121%
Flow 87%
2007 Jan 1
Snow 83%

Lewis Lake Divide Soil Moisture - Water Year 2006

Lewis Lake Divide Soil Moisture - Water Year 2007



January 1 Surface Water Supply Index (SWSI)

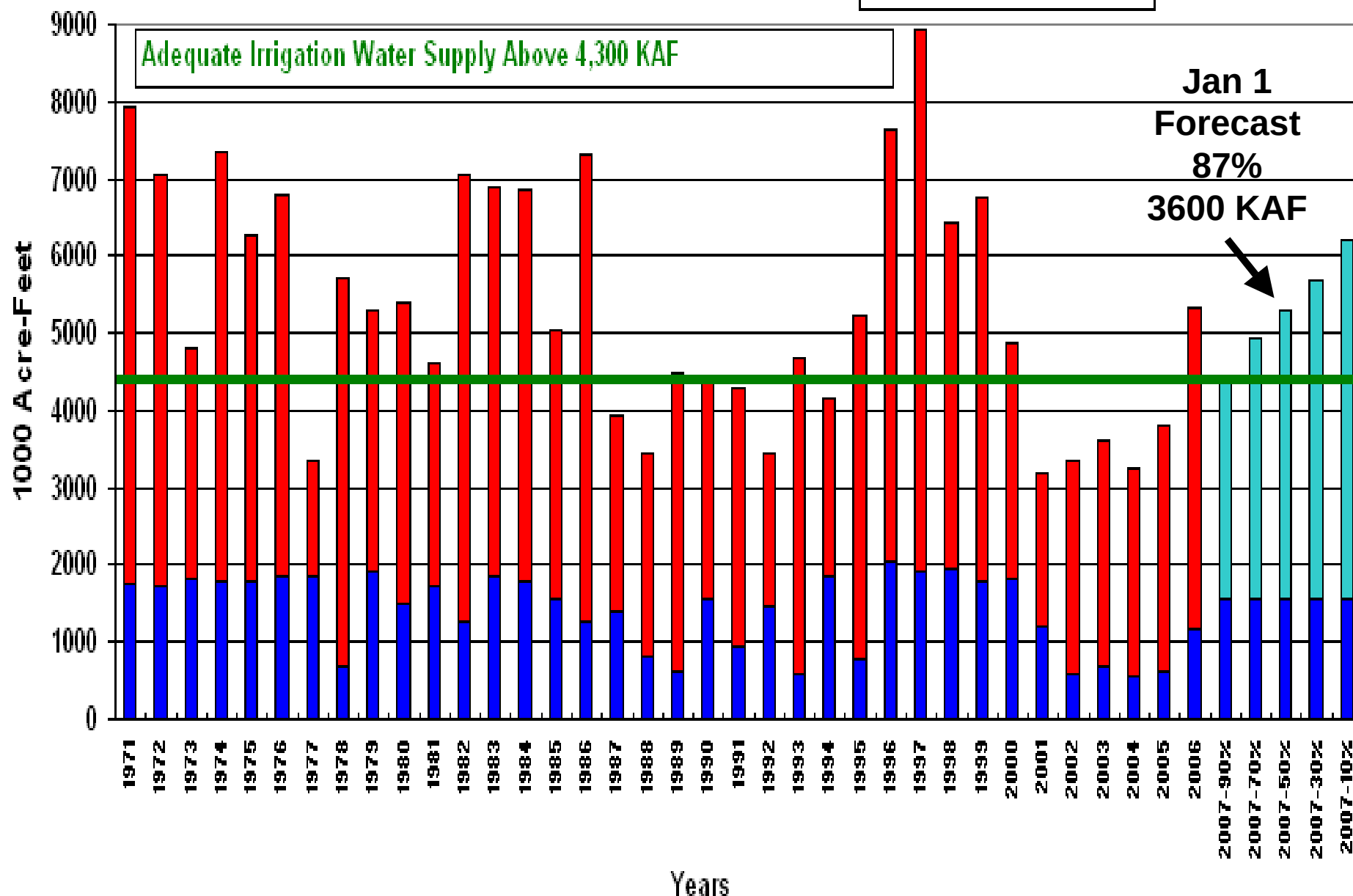
Snake River near Heise & Jackson and Palisades Reservoirs

■ Streamflow Apr-Sep
■ Reservoir 31-Dec



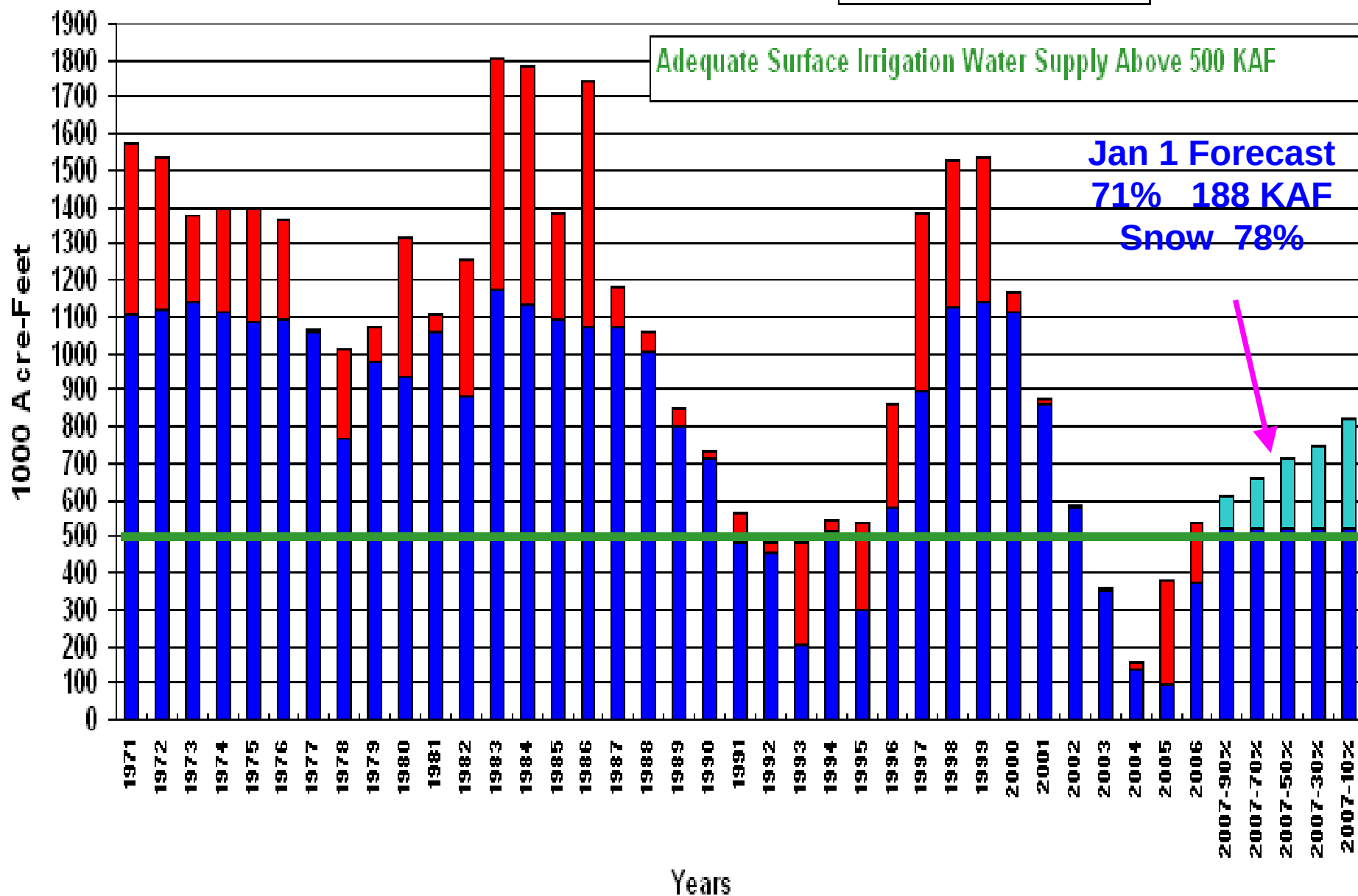
Adequate Irrigation Water Supply Above 4,300 KAF

Jan 1
Forecast
87%
3600 KAF



January 1 Bear River Surface Water Supply Index (SWSI) Bear River at Stewart Dam & Bear Lake

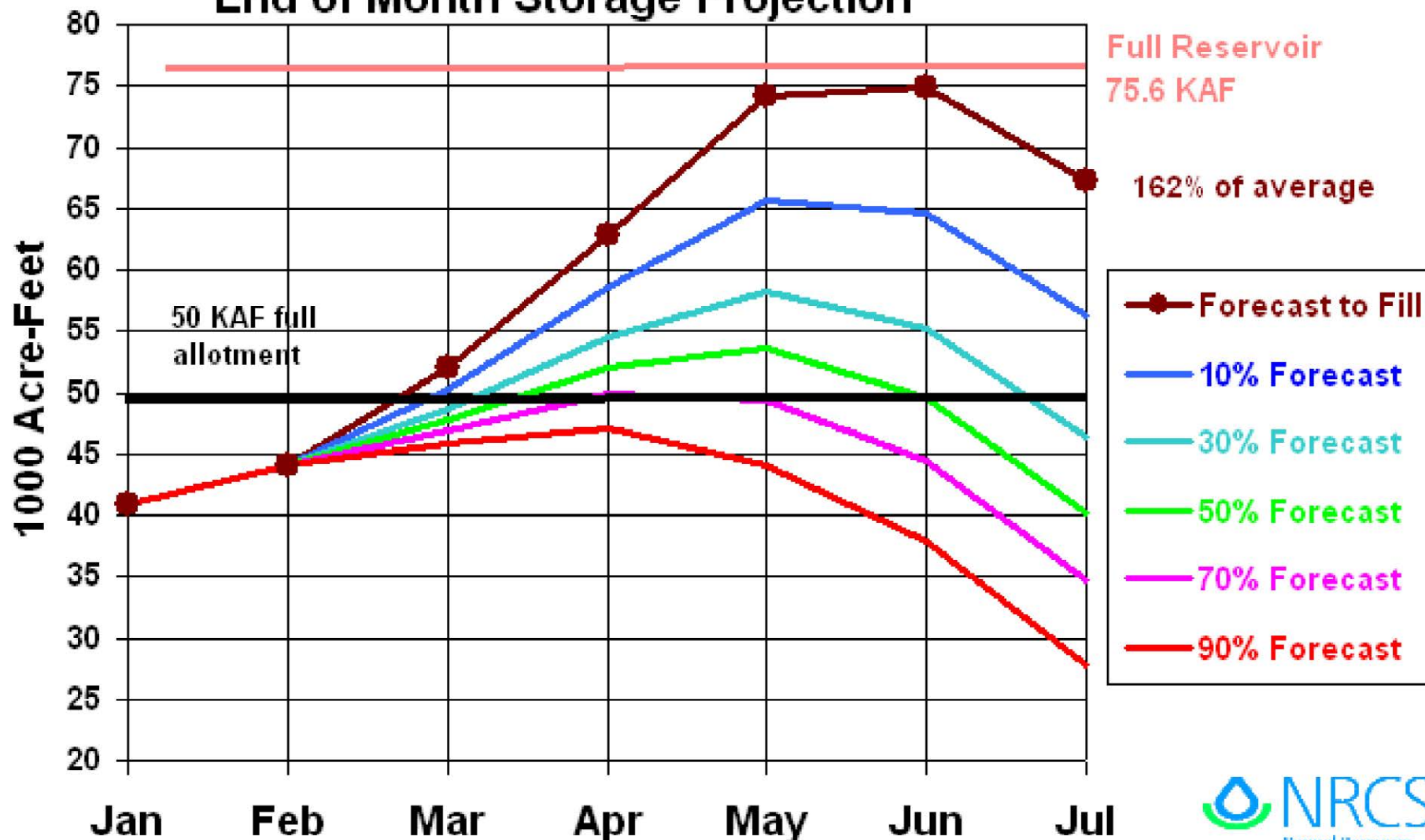
■ Streamflow Apr-Sep
■ Reservoir 31-Dec



Oakley Reservoir

January 1, 2007

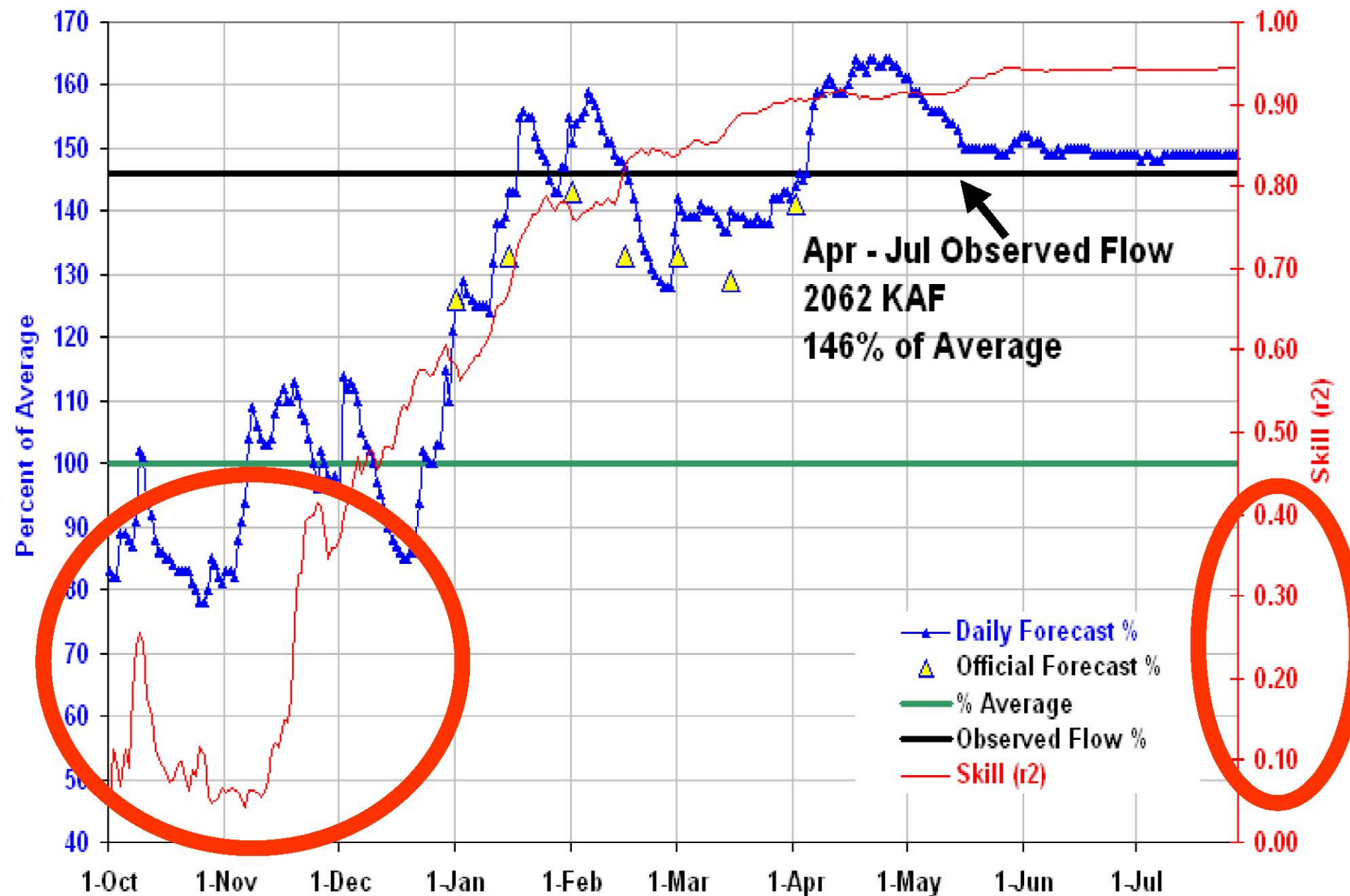
End of Month Storage Projection



	Salmon Falls SWSI	Adequate Water Supply Greater than -1.5 SWSI or 110 KAF						
Station #			Period	Data Type	Years	# of Years		
13105000	Salmon Falls Creek nr San Jacinto		Mar-Sep	strm	1971-2006	36	Units KAF	
13106500	Salmon Falls Reservoir		31-Dec	resv	1971-2006	36	Units KAF	
	ENSO Classification							
	SE Strong El Nino - EN Mild El Nino - N Nuetral - LN Mild La Nina - SL Strong La Nina							
	2006 Provisional Data					Streamflow +	Non-	
Historic Rank	Year	Allotment (per share)	ENSO	Streamflow Mar-Sep	Reservoir 31-Dec	Reservoir Sum	Exceedance Probability	SWSI
1	1984	1.167	N	288.5	72.9	361.4	0.97	3.9
2	1985	1.167	N	98.8	133.4	232.2	0.95	3.7
3	1972	1.167	LN	138.9	79.5	218.4	0.92	3.5
4	1975	1.167	LN	157.9	58.5	216.4	0.89	3.3
5	1976	1.167	SL	102.2	109.0	211.2	0.86	3.0
6	1986	1.167	N	115.6	90.3	205.9	0.84	2.8
	2007 10% Chance Exceedance Forecast	1.167	EN	122.0	72.8	194.8	0.82	2.7
7	1971	1.167	LN	159.7	34.3	194.0	0.81	2.6
8	1973	1.167	SE	97.0	93.0	190.0	0.78	2.4
9	2006	1.167	N	150.2	36.4	186.6		
10	1998	1.167	SE	112.7	71.7	184.4	0.73	1.9
11	1997	1.167	N	132.5	48.0	180.5	0.70	1.7
12	1974	1.167	SL	104.8	71.7	176.5	0.68	1.5
13	1983	1.167	SE	134.6	39.2	173.8	0.65	1.2
	2007 30% Chance Exceedance Forecast	1.167	EN	101.0	72.8	173.8	0.64	1.1
14	1999	1.020	SL	91.8	76.6	168.4	0.62	1.0
	2007 50% Chance Exceedance Forecast	1.167	EN	86.0	72.8	158.8	0.61	0.9
15	1996	1.167	N	106.5	49.0	155.5	0.59	0.8
16	1980	1.167	N	113.7	30.4	144.1	0.57	0.6
	2007 70% Chance Exceedance Forecast	1.167	EN	71.0	72.8	143.8	0.55	0.5
17	1982	1.167	N	116.7	14.2	130.9	0.54	0.3
18	1993	1.050	EN	117.7	11.6	129.3	0.51	0.1
19	1979	1.050	N	100.0	29.0	129.0	0.49	-0.1
20	1995	1.000	SE	115.2	13.0	128.2	0.46	-0.3
21	1978	0.940	SE	96.5	30.1	126.6	0.43	-0.6
22	1987	0.940	N	33.2	91.9	125.1	0.41	-0.8
	2007 90% Chance Exceedance Forecast	-0.85	EN	50.0	72.8	122.8	0.39	-0.9
23	1977	0.820	EN	35.4	80.4	115.8	0.38	-1.0
24	2005	0.840	EN	97.0	14.8	111.8	0.35	-1.2
	Adequate Water Supply Greater than -1.5 SWSI or 110 KAF							
25	1989	0.890	SL	91.0	17.8	108.8	0.32	-1.5
26	2000	0.481	N	48.4	53.5	101.9	0.30	-1.7
27	1988	0.570	SE	56.0	33.6	89.6	0.27	-1.9
28	1981	0.520	N	26.6	56.1	82.7	0.24	-2.1
29	1994	0.330	SE	32.6	42.0	74.6	0.22	-2.4
30	2004	0.425	N	60.8	11.6	72.4	0.19	-2.6

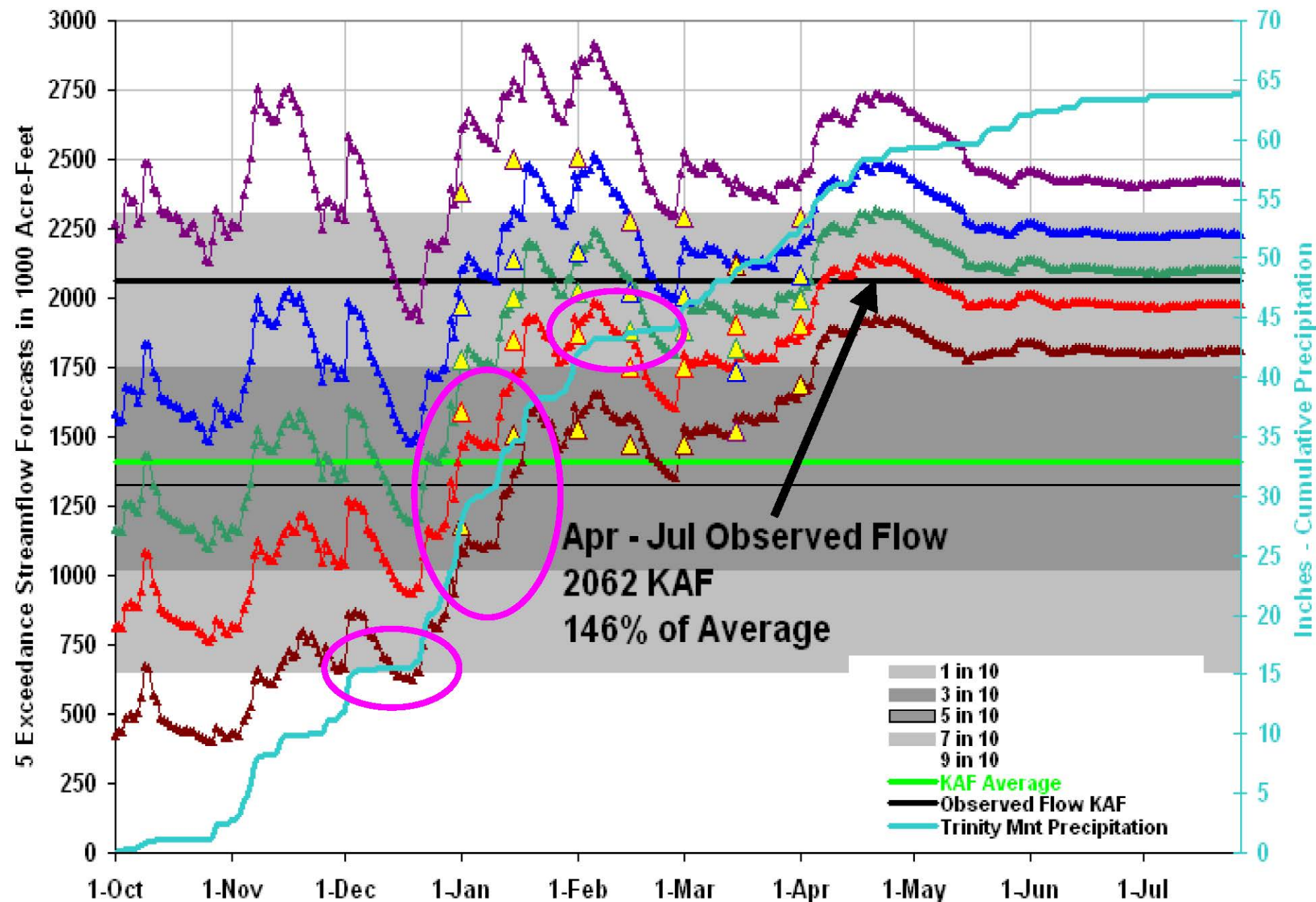
2006 Boise River near Boise Daily Streamflow Forecasts Using SNOTEL Data

Official Forecasts (triangles) and Observed Flow (at end of season)

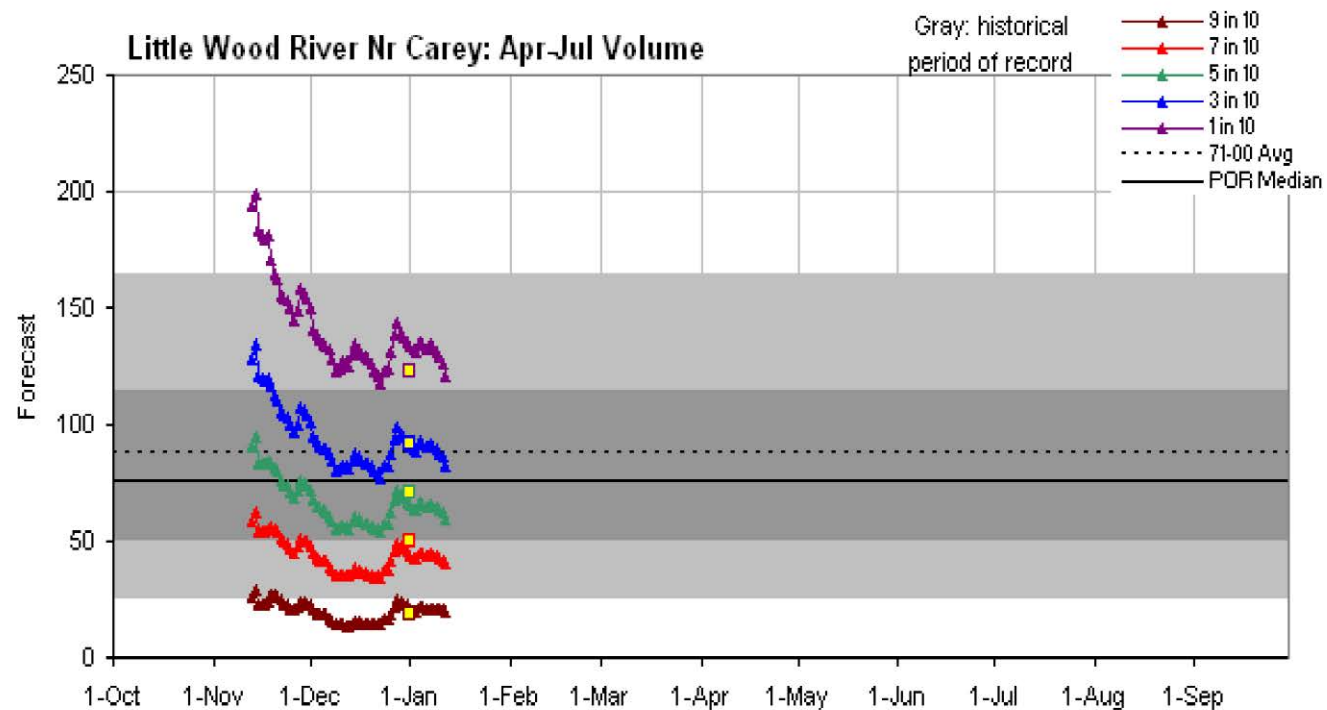
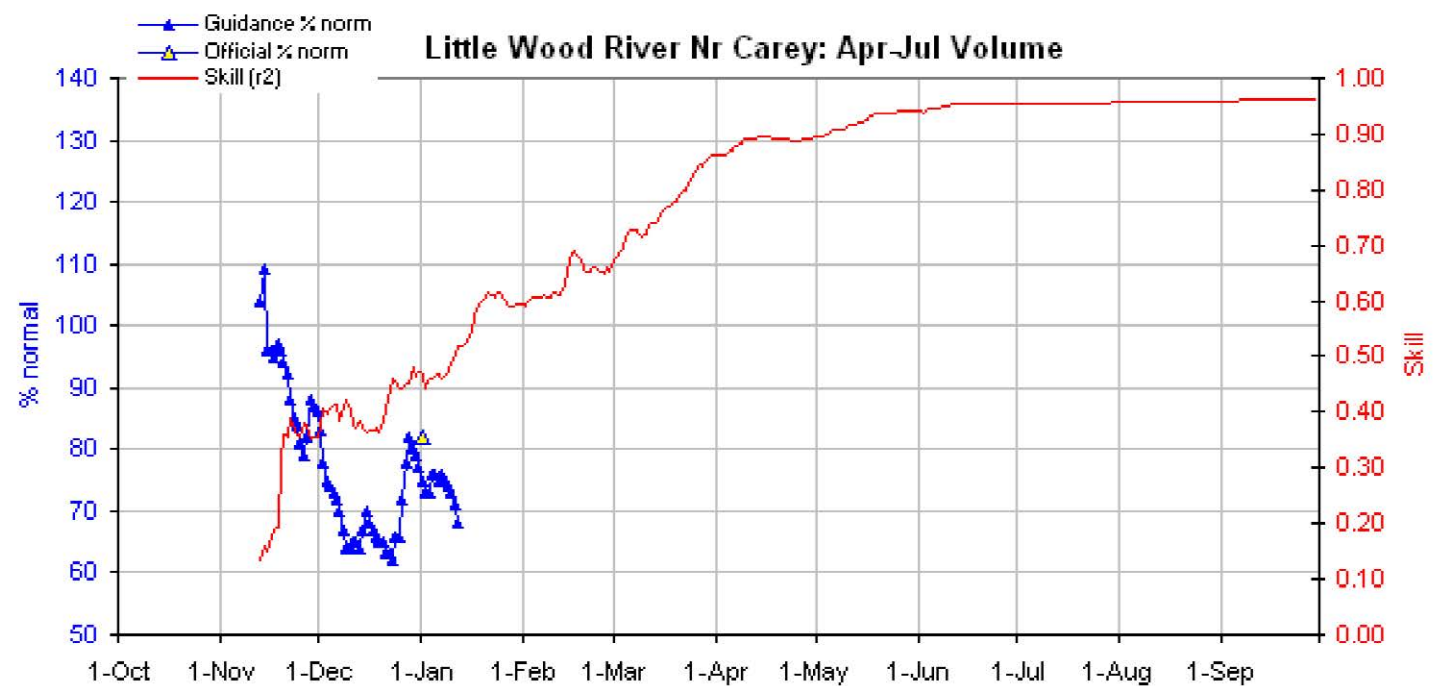


2006 Boise River near Boise Daily Streamflow Forecasts Using SNOTEL Data

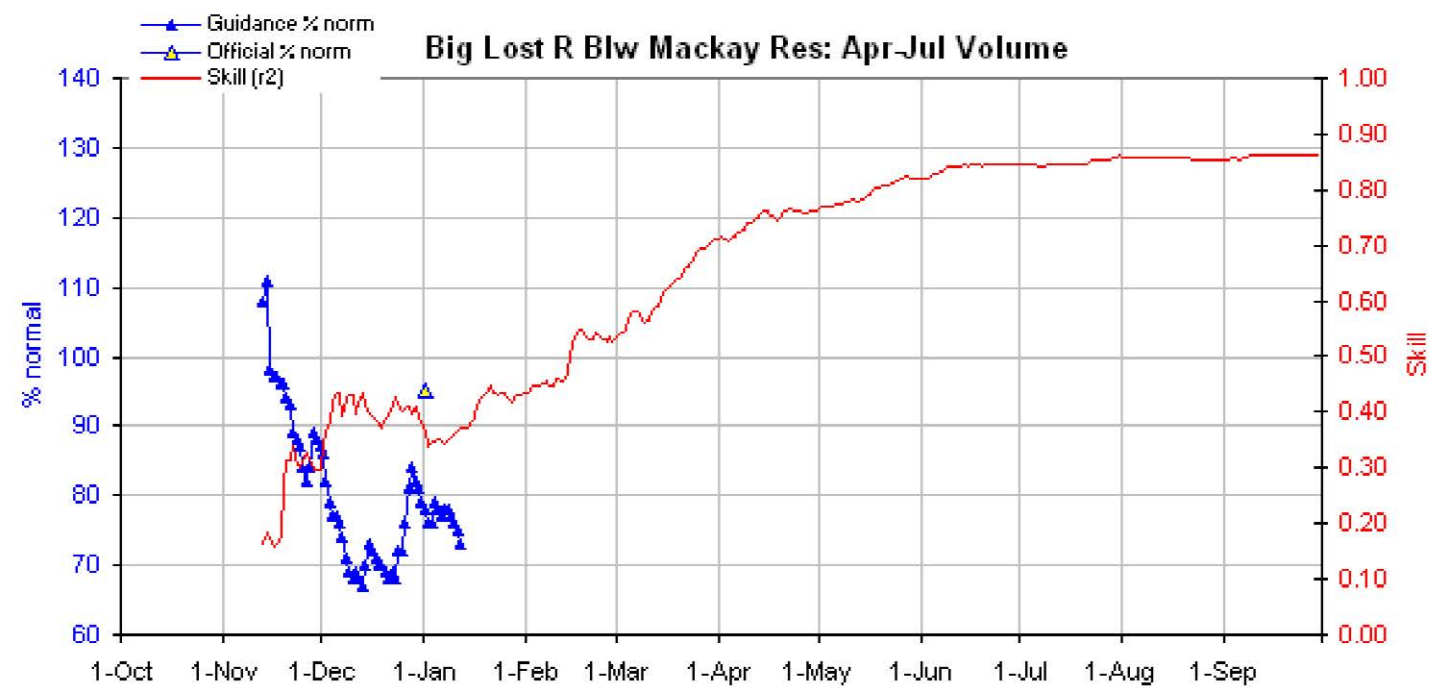
Official Forecasts (triangles) and Observed Flow (at end of season)



SNOTEL Precipitation Summary Report		
<i>for January 1-11 and Compared to Annual Total</i>		
Region or Basin	January 1-11 Precipitation as % of Monthly Total	Oct 1 - Jan 11 Precipitation as % of Annual Total
PANHANDLE REGION	54	53
CLEARWATER BASIN	53	50
SALMON BASIN	34	39
WEISER BASIN	27	38
PAYETTE BASIN	32	43
BOISE BASIN	28	42
BIG WOOD BASIN	23	38
LITTLE WOOD BASIN	26	32
BIG LOST BASIN	24	30
LITTLE LOST, BIRCH BASINS	31	30
MEDICINE LODGE, BEAVER, CAMAS	29	31
HENRYS FORK, TETON BASINS	36	36
SNAKE BASIN ABOVE PALISADES	43	35
WILLOW, BLACKFOOT, PORTNEUF BASINS	29	34
OAKLEY BASIN	34	47
SALMON FALLS BASIN	27	37
BRUNEAU BASIN	24	35
OWYHEE BASIN	22	35
BEAR RIVER BASIN	26	31



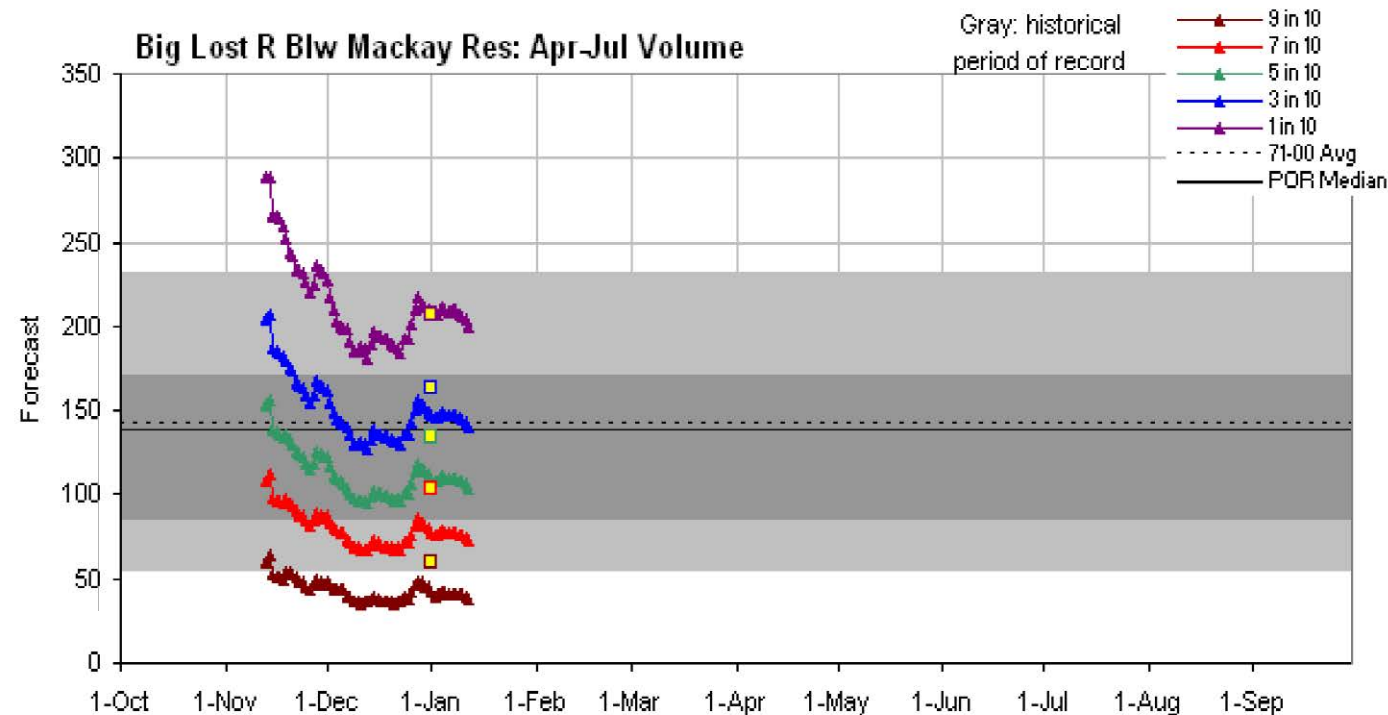
Big Lost R Blw Mackay Res: Apr-Jul Volume



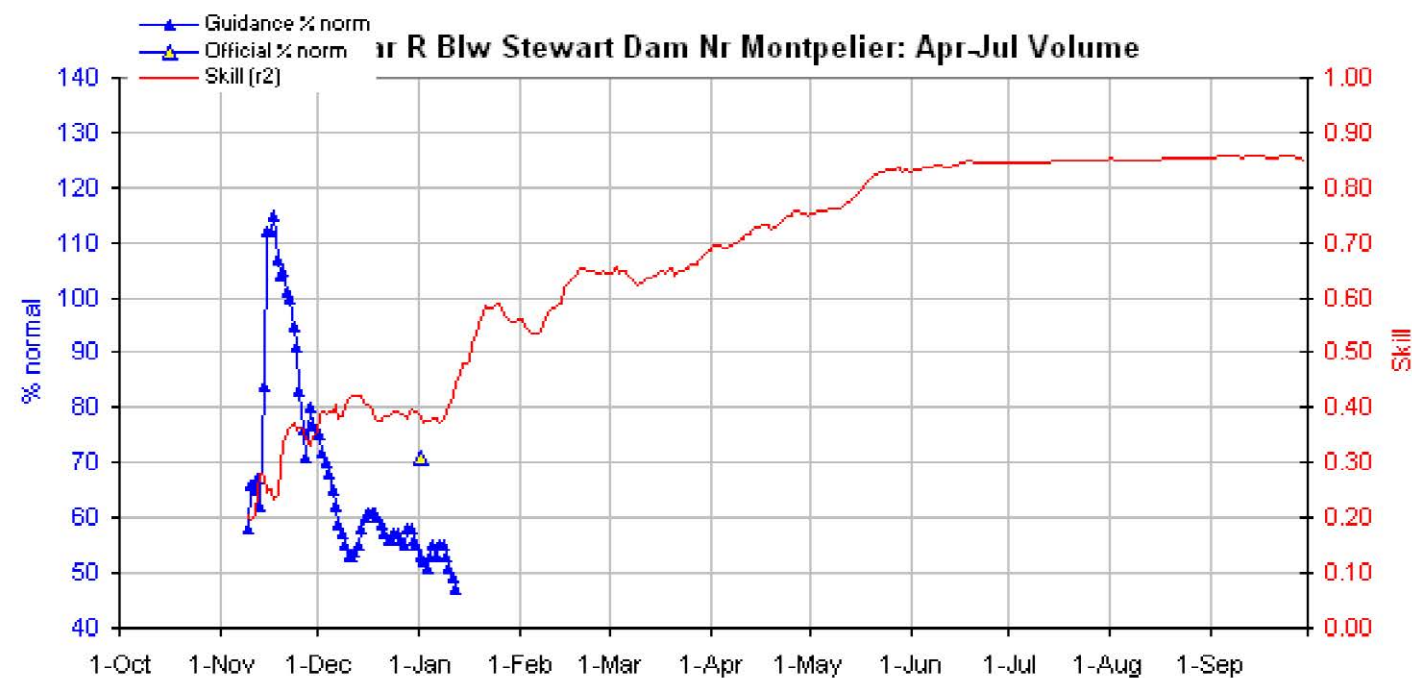
**Only based on
daily SNOTEL
data**

**No baseflow in
equation
which is a big
component in
this basin**

Big Lost R Blw Mackay Res: Apr-Jul Volume



Bear R Blw Stewart Dam Nr Montpelier: Apr-Jul Volume

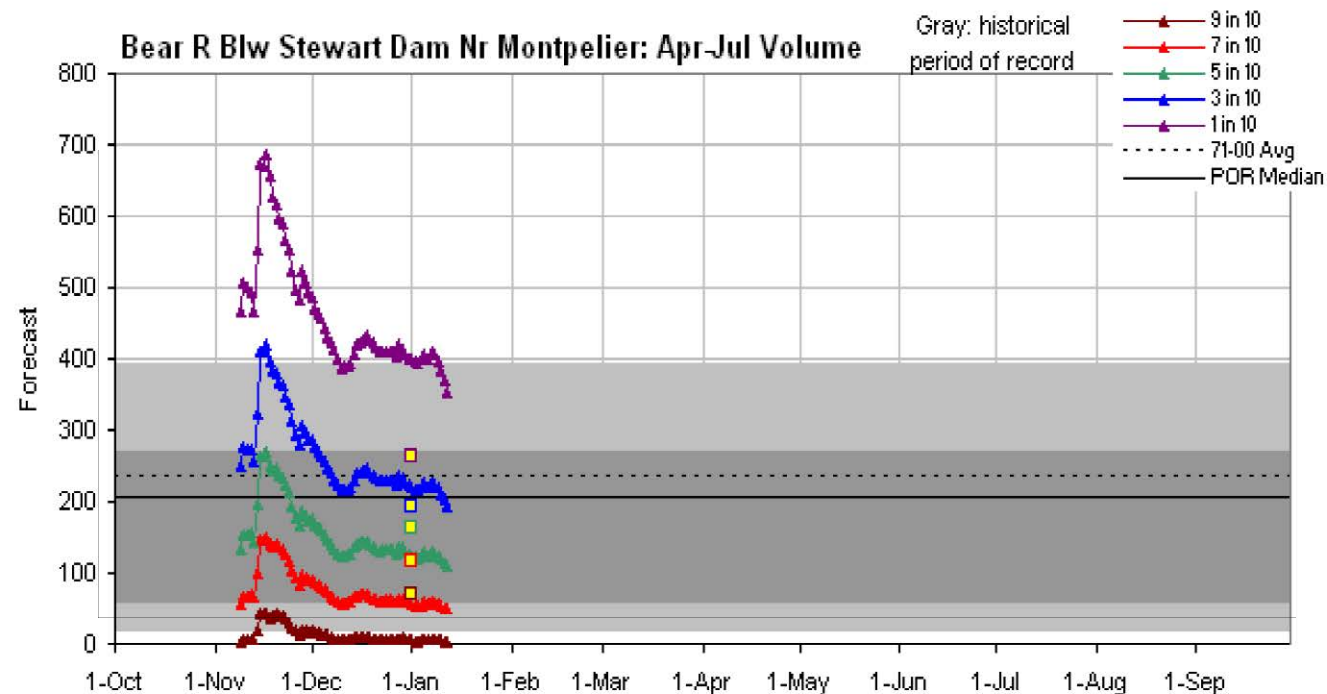


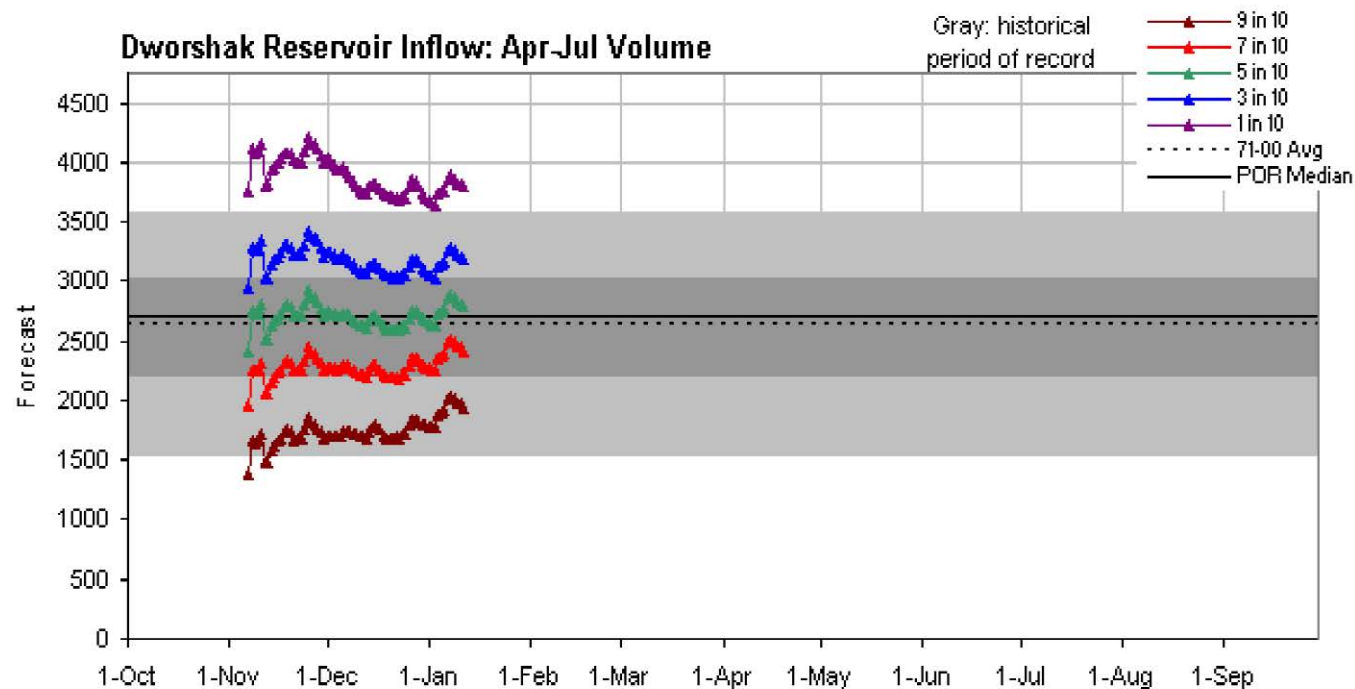
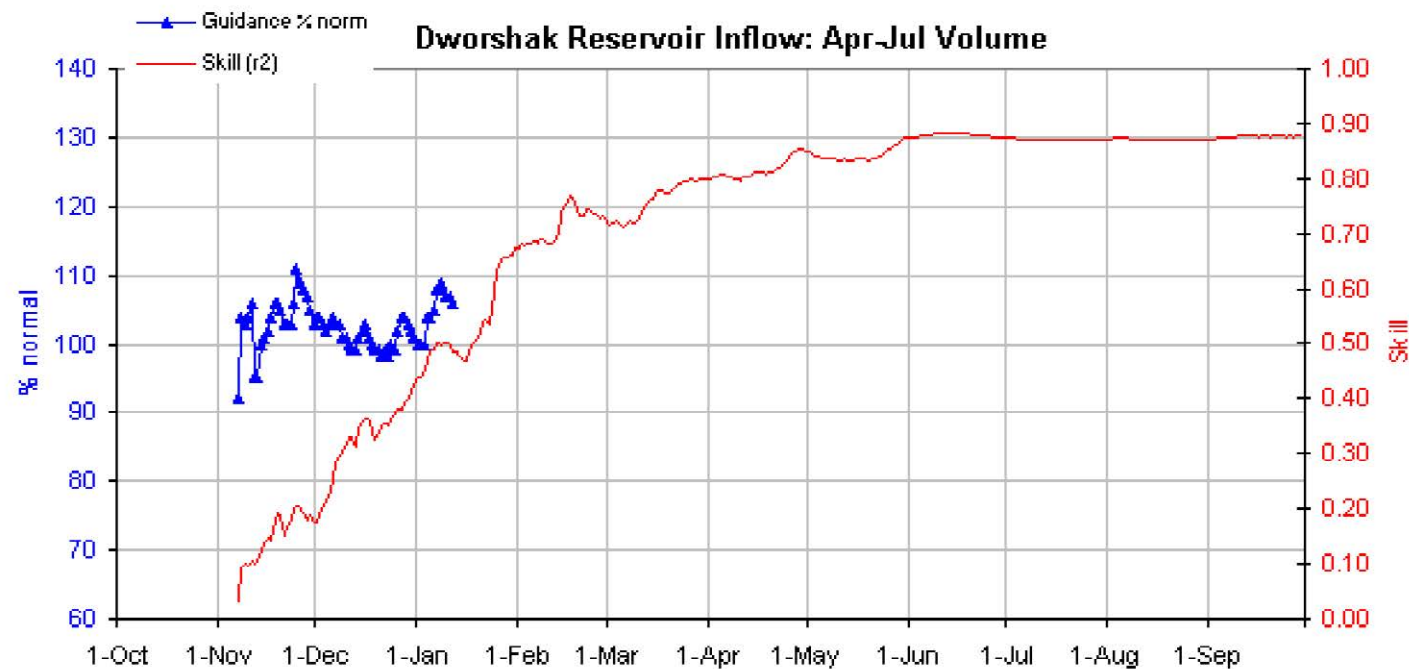
**Only based on
daily SNOTEL
data**

**No baseflow in
equation
which is a big
component in
this basin**

**We use last
summer's
flows to
predict this
year's runoff**

Bear R Blw Stewart Dam Nr Montpelier: Apr-Jul Volume



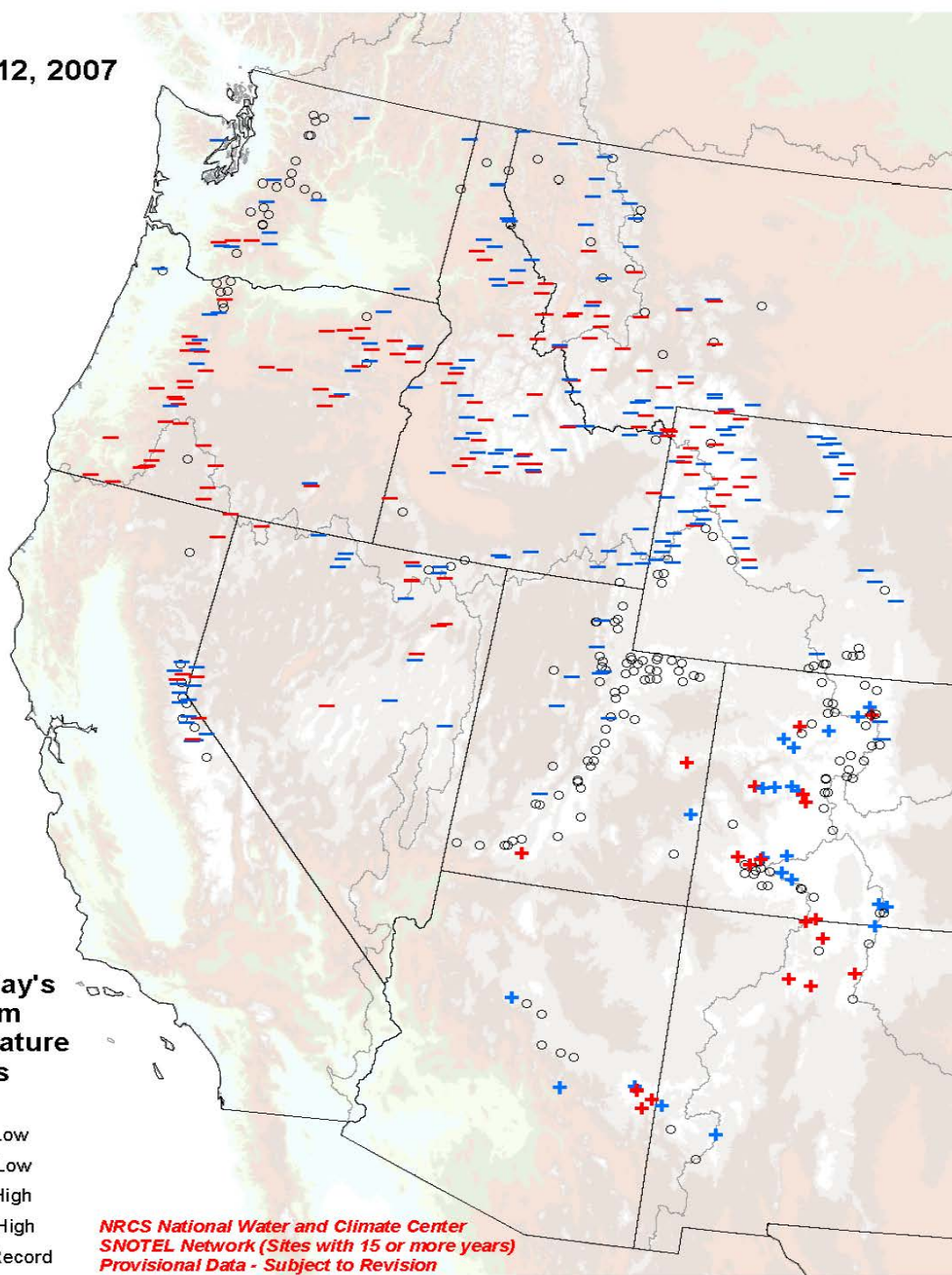


Jan 12, 2007

**Yesterday's
Minimum
Temperature
Records**

- New Low
- Near Low
- + New High
- + Near High
- Non Record

*NRCS National Water and Climate Center
SNOTEL Network (Sites with 15 or more years)
Provisional Data - Subject to Revision*



Storm Damage from December 2006 Weather Events



Wind Damage

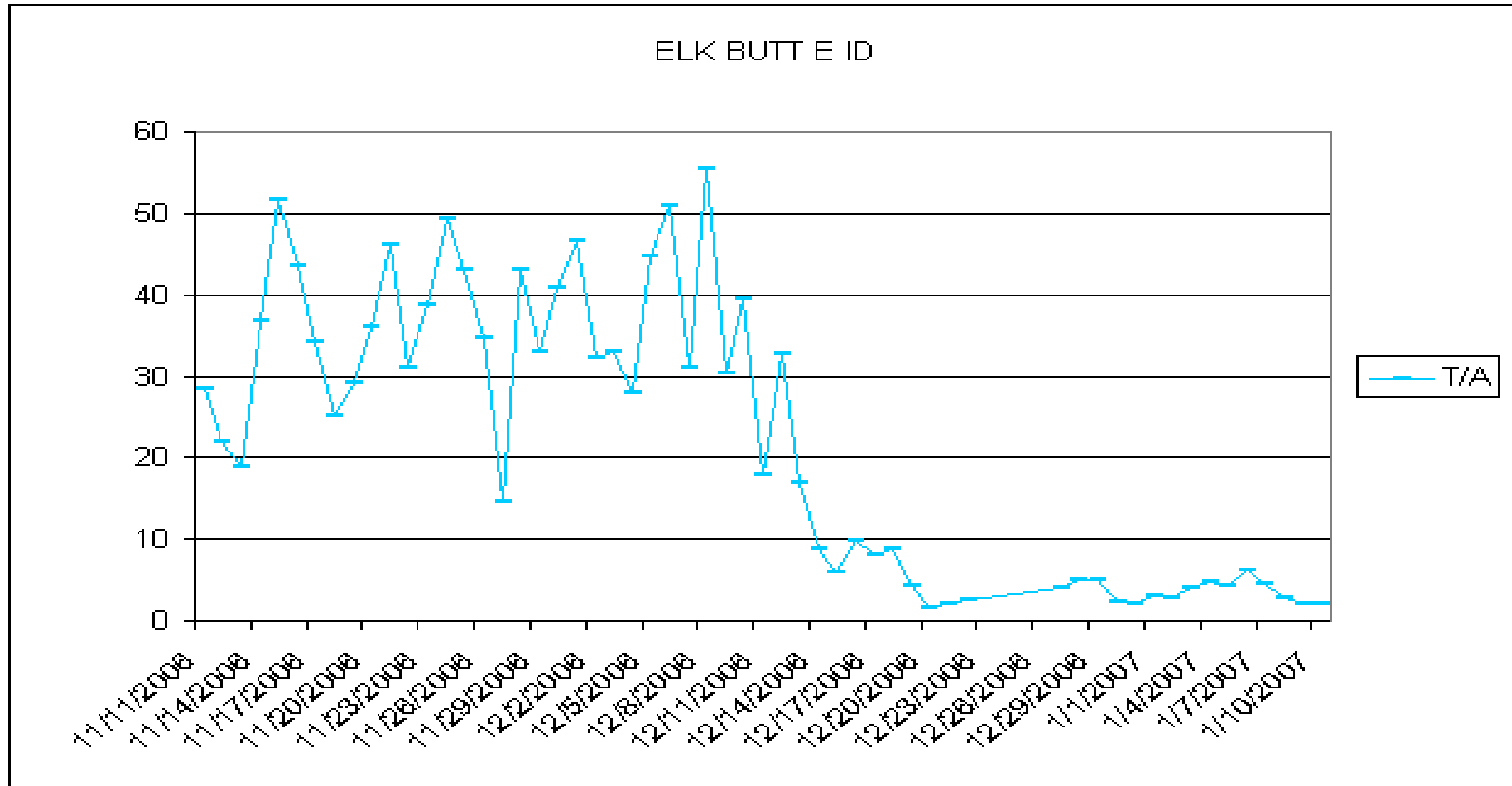
Site was still reporting
intermittently, and is
now fixed



Spruce Springs near
Clarkston WA

Dec 14-15, 2006 Wind Storm

- Most sites - performance decreased
- Some sites - performance increased
- Charts show Transmit to Acknowledgement ratio (T/A)
 - T/A is the average number of transmits the site has to make to get 1 acknowledgement from Master Station



**Elk Butte
SNOTEL Site
Clearwater
Basin Idaho**

**Damaged Antenna &
Precipitation Gage**



**Tree across pillow,
and increased snow
depth 30 inches!**

**Some sites work better
half broken.....**



Idaho State Water Supply Committee Meeting

January 12th, 2006

Jay Breidenbach / NOAA National Weather Service

2006 Precipitation Summary

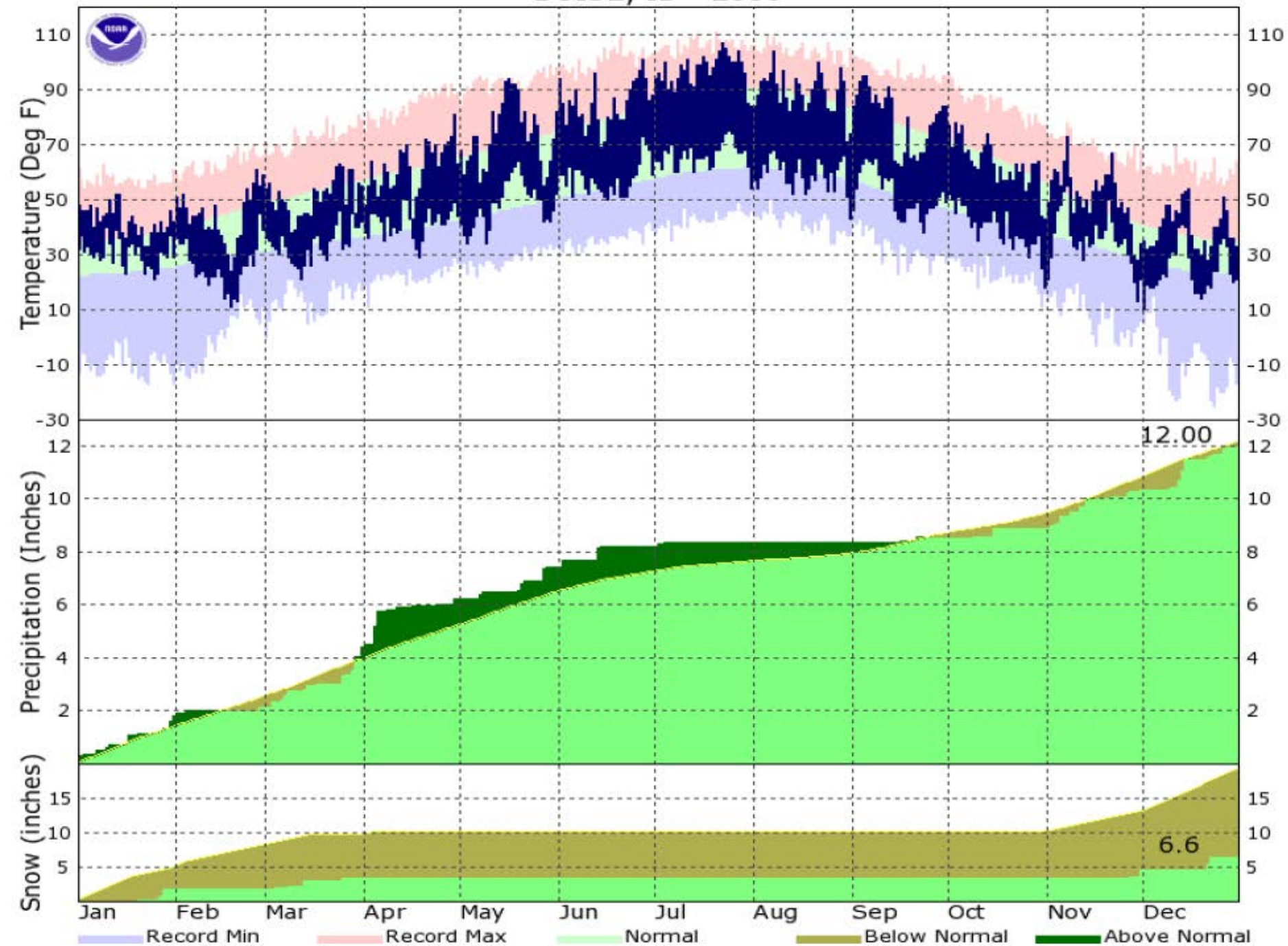
El-Nino Status

Climate Outlook

Early Look at Water Supply Numbers

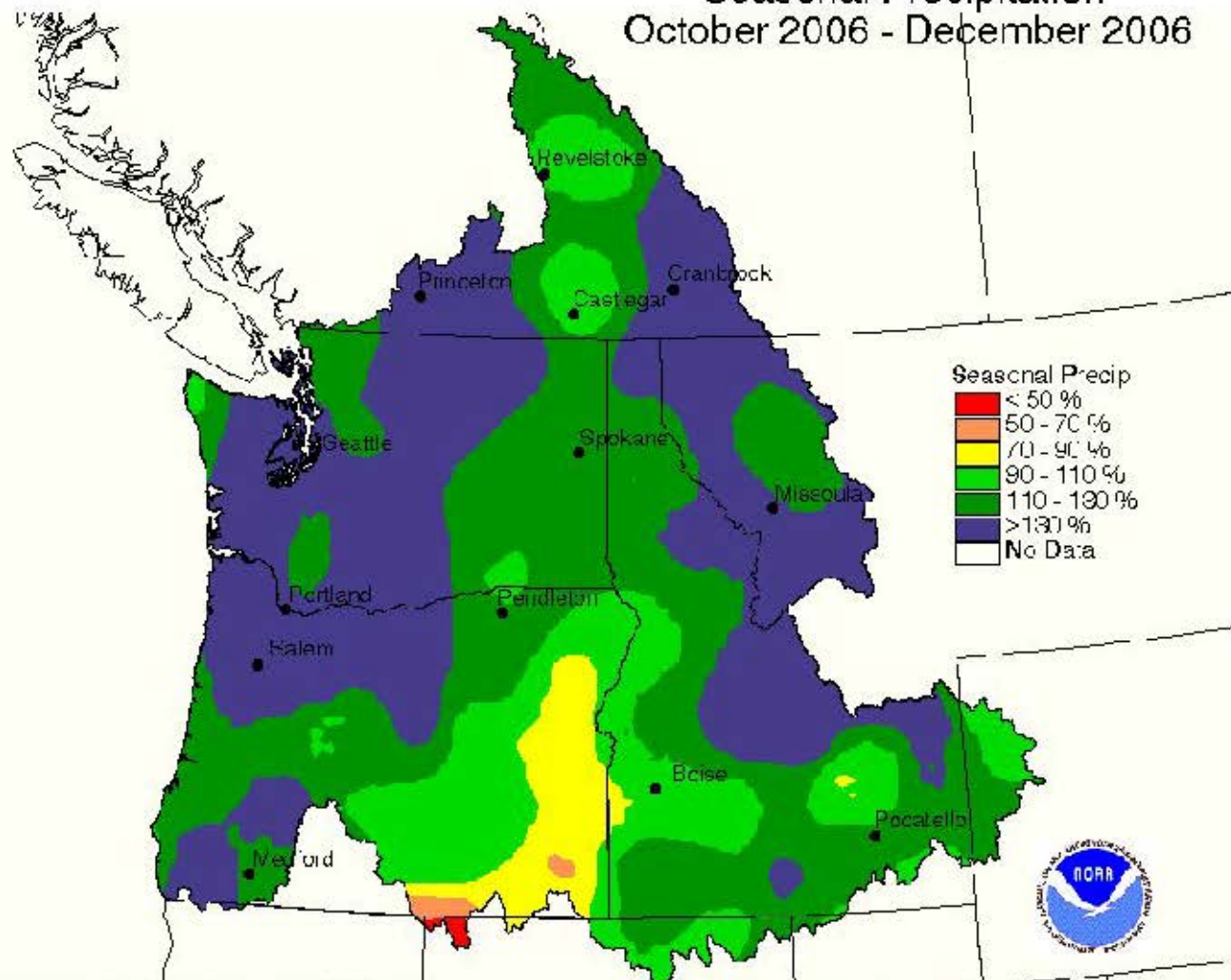
Spring Flood Potential

BOISE, ID - 2006





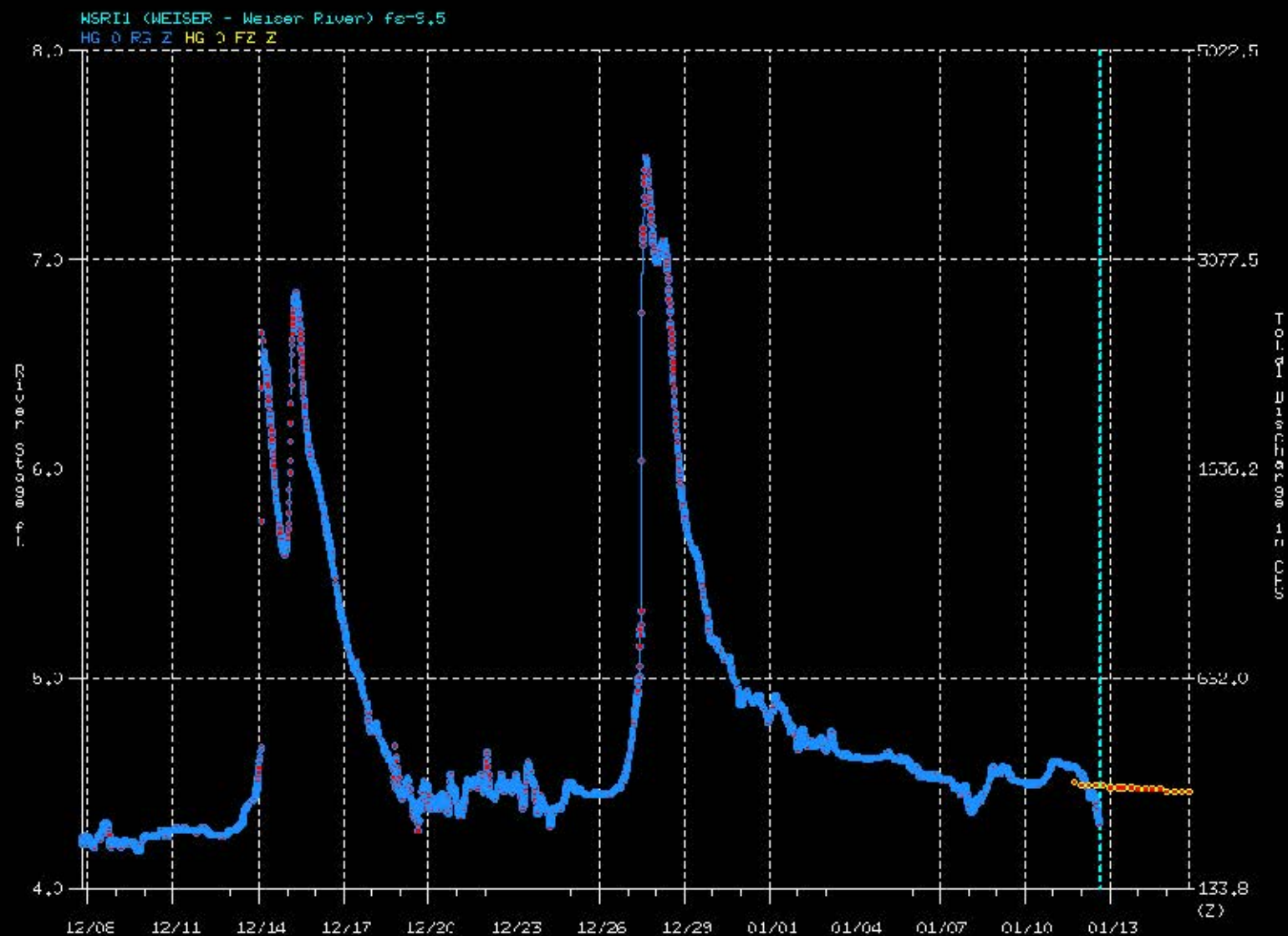
Seasonal Precipitation October 2006 - December 2006



Creation Date: Mon, Jan 08 2007

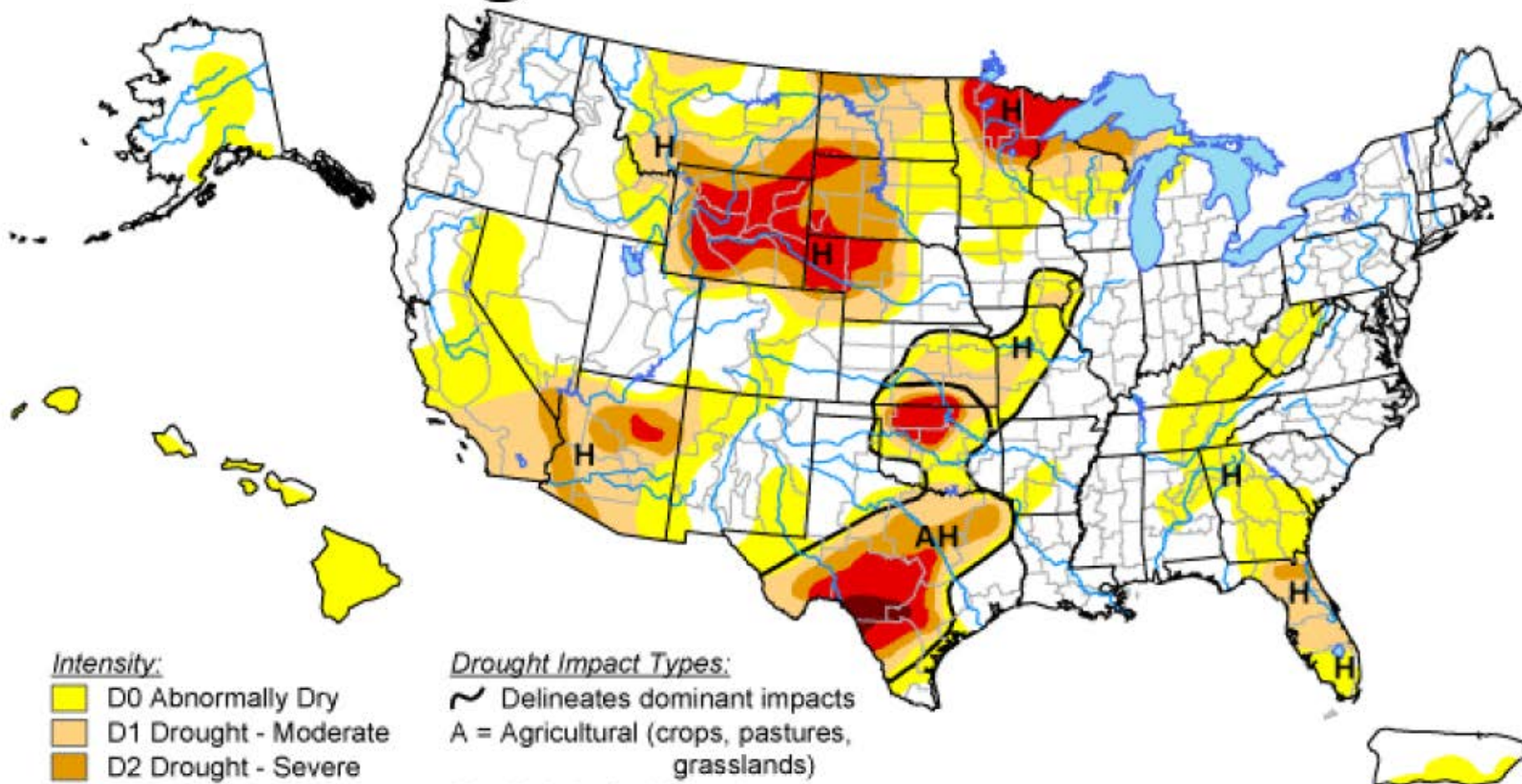
Produced by the Northwest River Forecast Center





U.S. Drought Monitor

January 9, 2007
Valid 7 a.m. EST



Intensity:

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

Drought Impact Types:

- Delineates dominant impacts
- A = Agricultural (crops, pastures, grasslands)
- H = Hydrological (water)

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, January 11, 2007

Author: Brian Fuchs, National Drought Mitigation Center



Modeled Snow Water Equivalent (Hourly) for 2007 January 11, 6:00 Z

318.8 mi

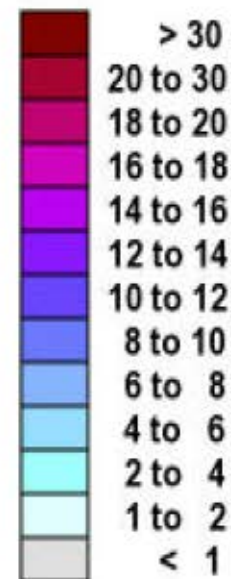
353.9 mi

353.9 mi

348.7 mi

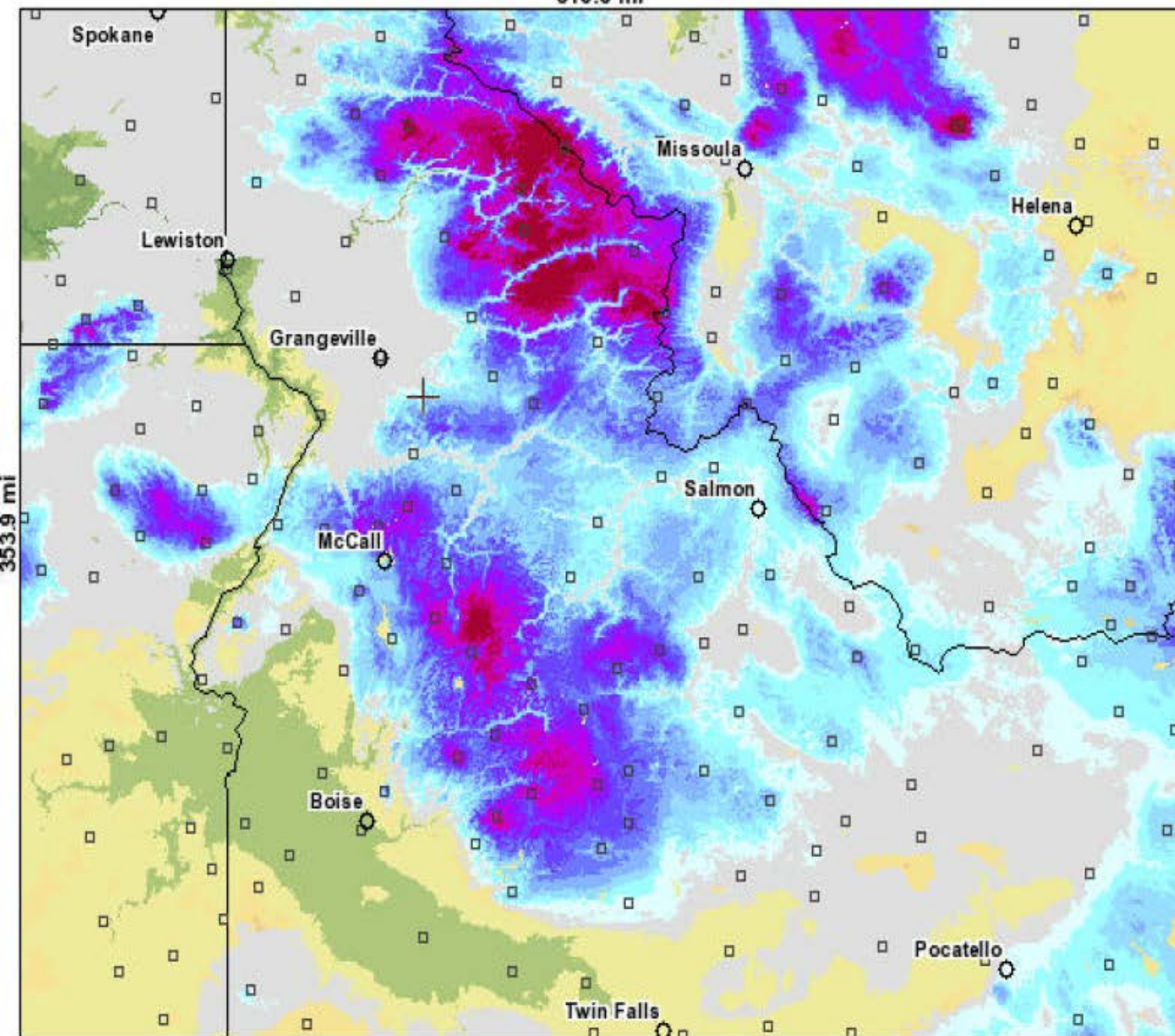
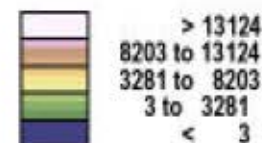


Inches of water equivalent



Not Estimated

Elevation in feet
(Not estimated)



Modeled Snow Depth (Hourly) for 2007 January 11, 6:00 Z

318.8 mi

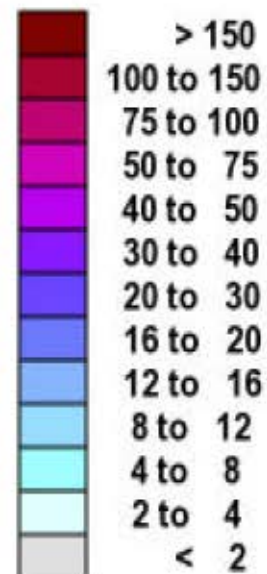
353.9 mi

353.9 mi

348.7 mi

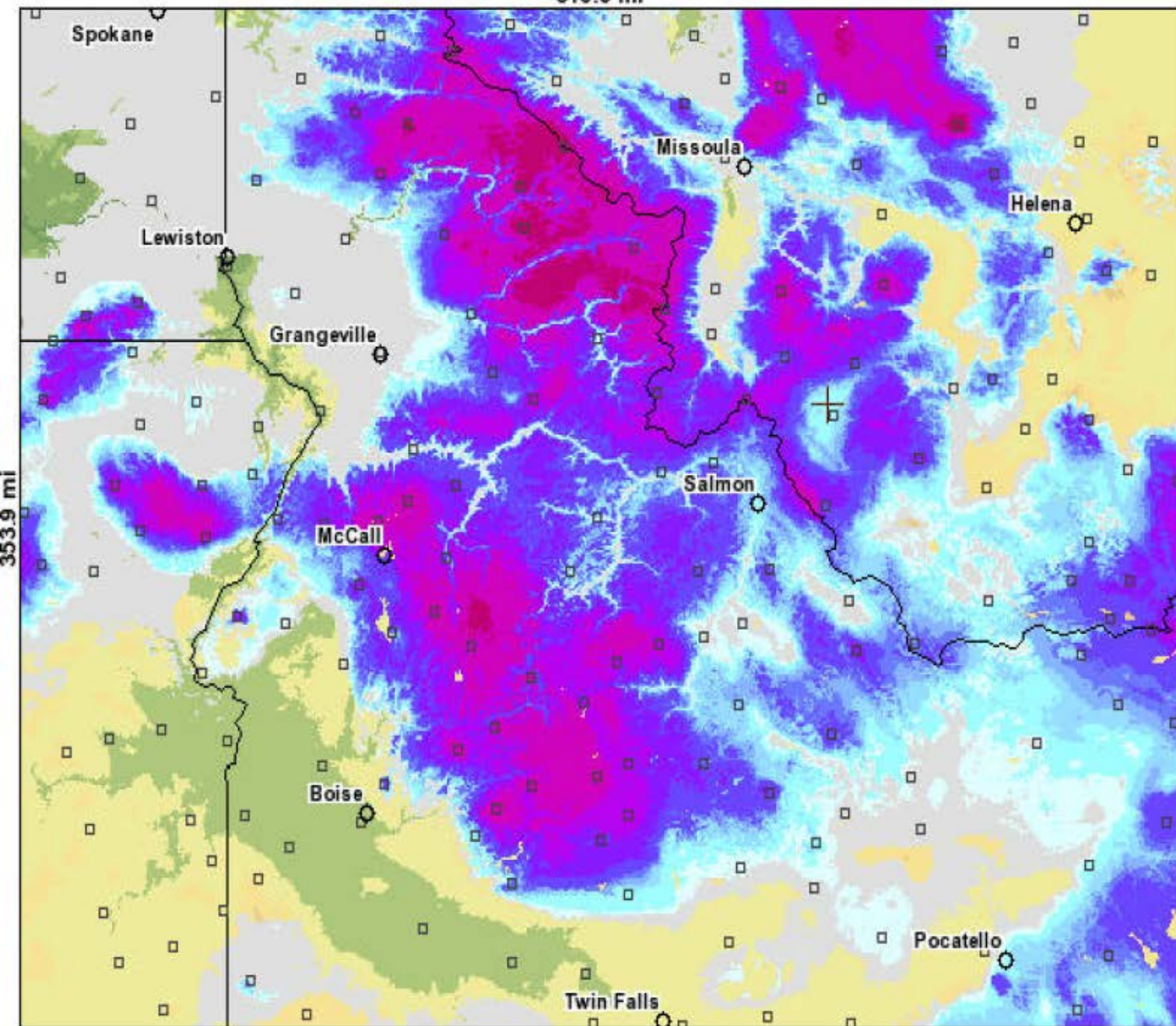


Inches of depth



Not Estimated

Elevation in feet
(Not estimated)

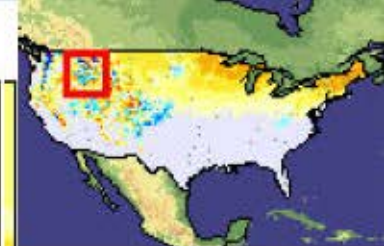
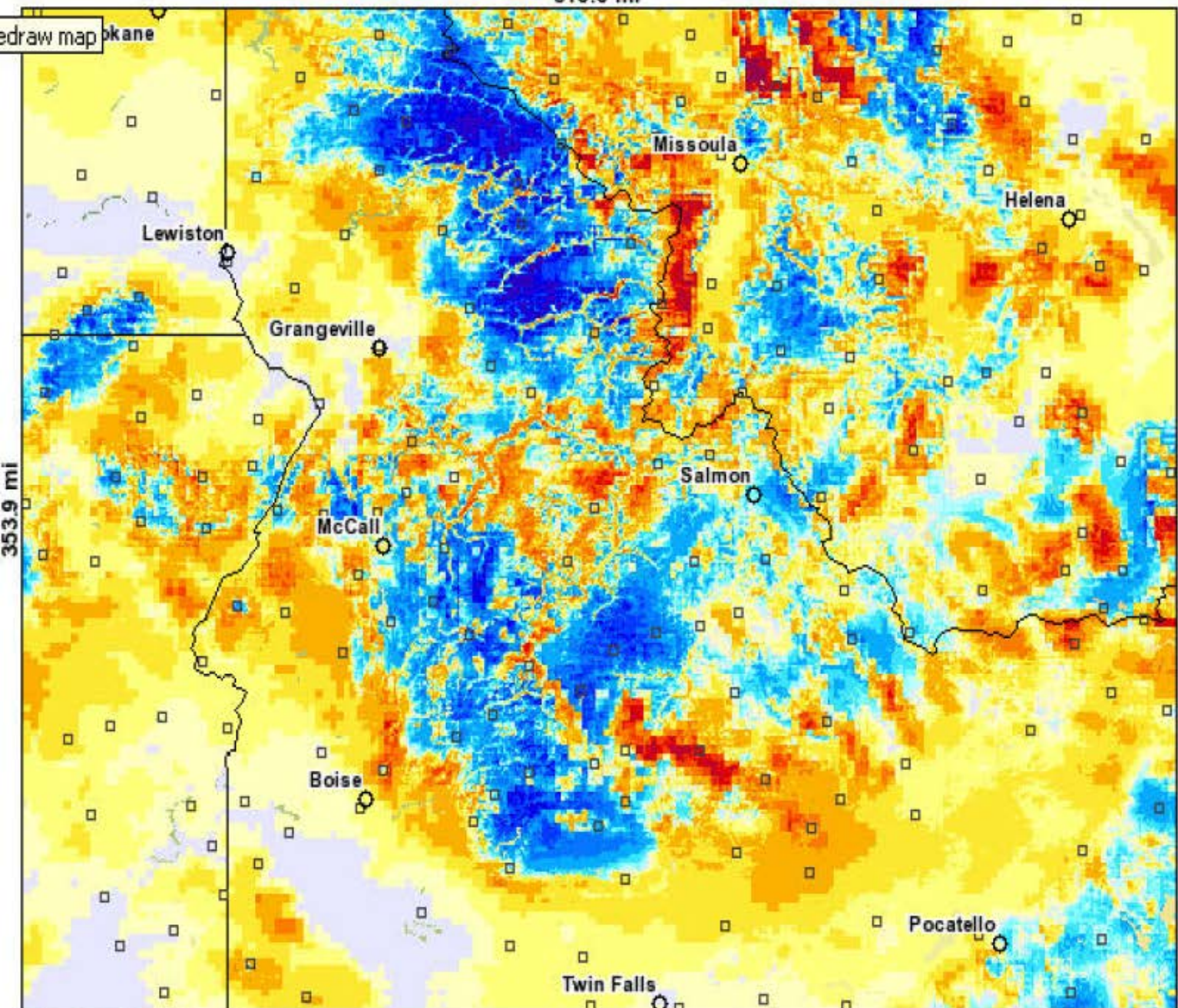


Modeled Snow Depth Departure from Normal (Daily) for 2007 January 11, 6:00 Z

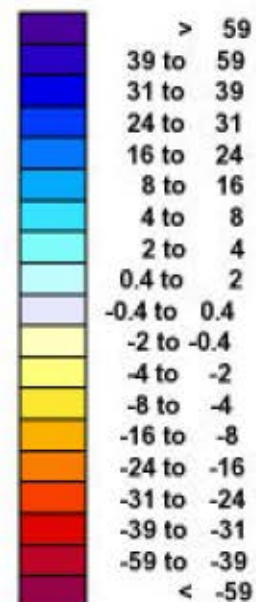
318.8 mi

edraw mapokane

353.9 mi

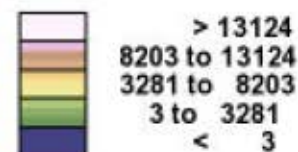


Inches of depth



Not Estimated

Elevation in feet
(Not estimated)





EQ. Upper-Ocean Heat Anoms. (deg C) for 180–100W

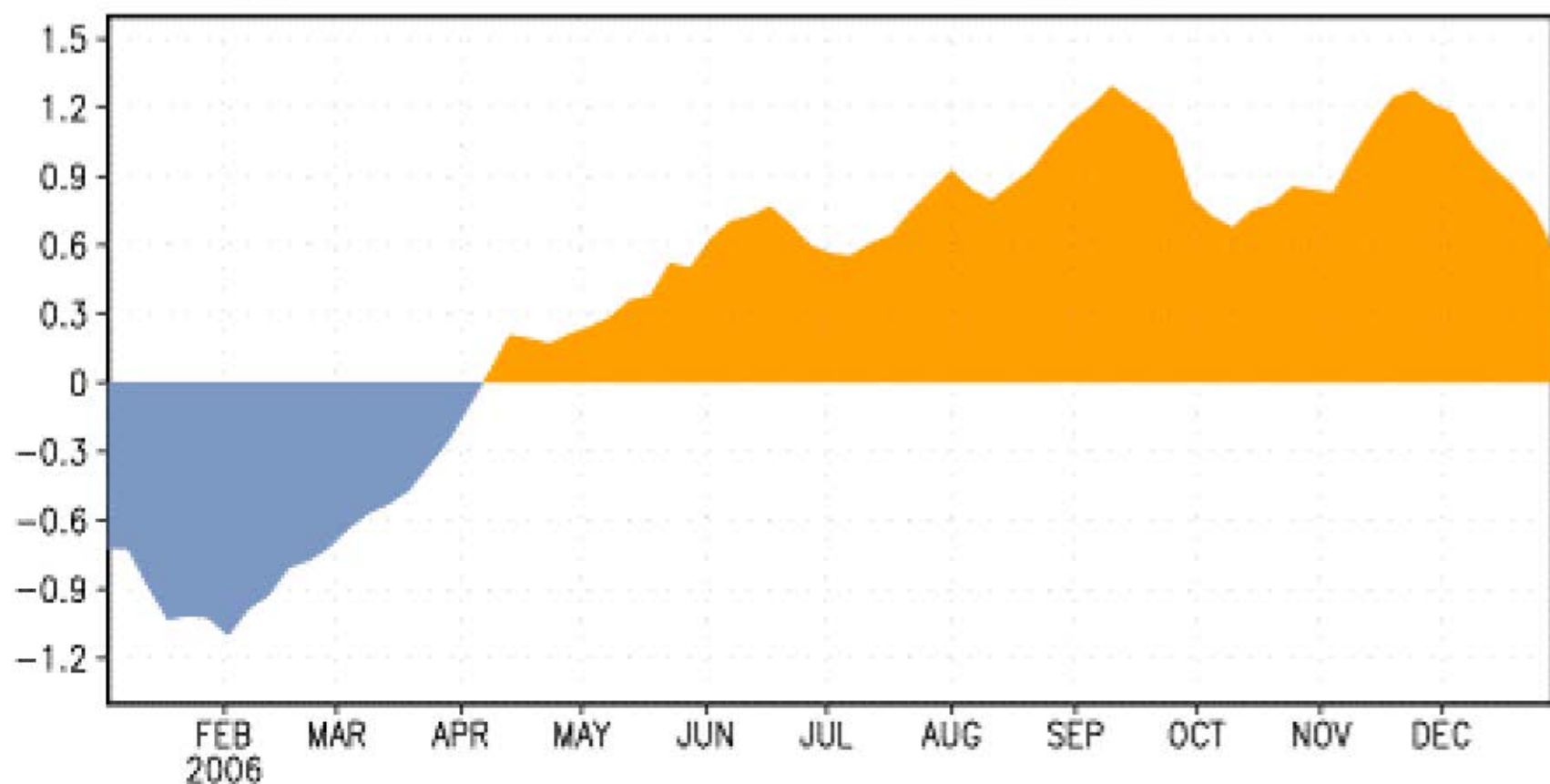
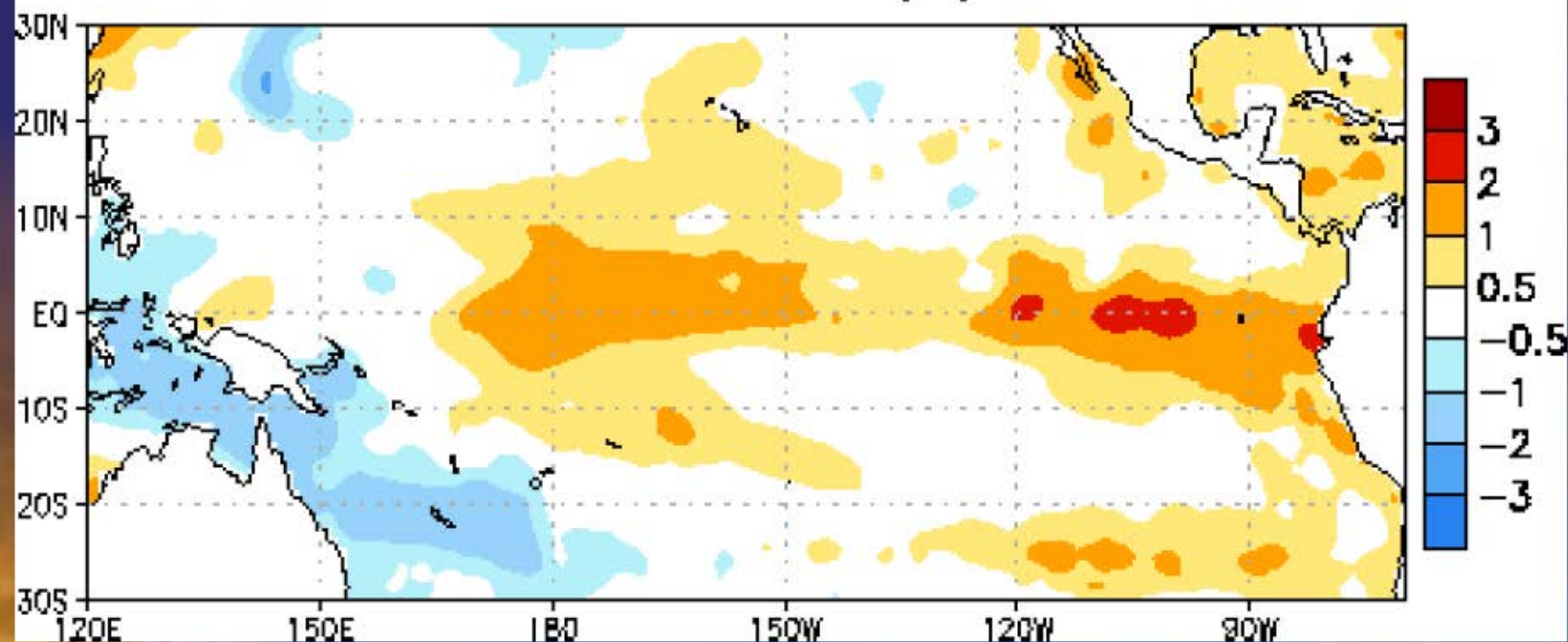


Figure 3. Anomalous equatorial upper-ocean heat content averaged over the longitude band 180°-100°W. Heat content anomalies are computed as departures from the 1982-2004 base period means.



Week centered on 18 OCT 2006
SST Anomalies (°C)



Snowfall (Inches; 1948–1993)

November thru March

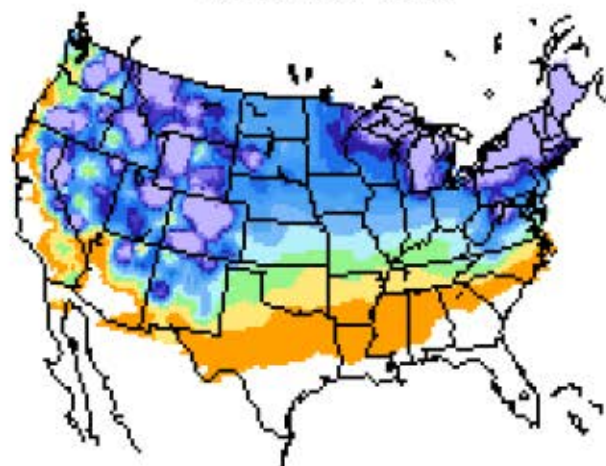
7 El Niño Years *

8 La Niña Years *

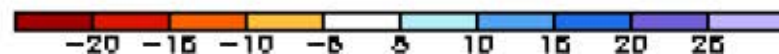
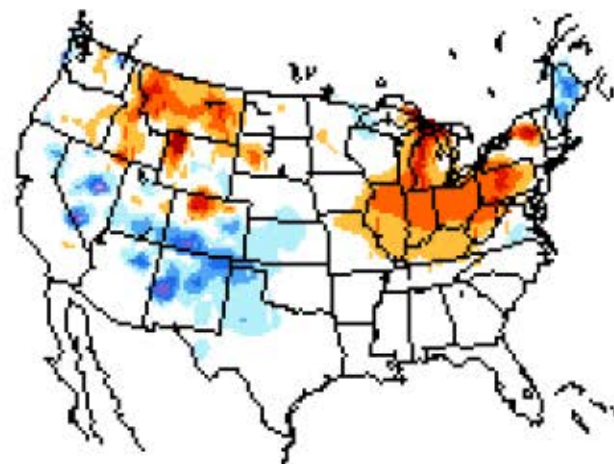
19 Neutral Years

* Moderate & Strong events only

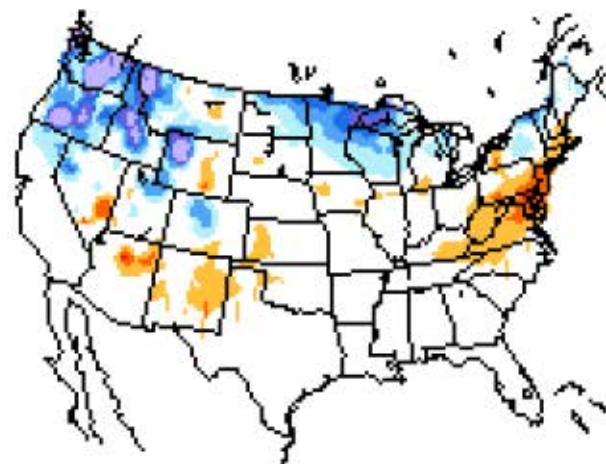
Neutral Year Mean

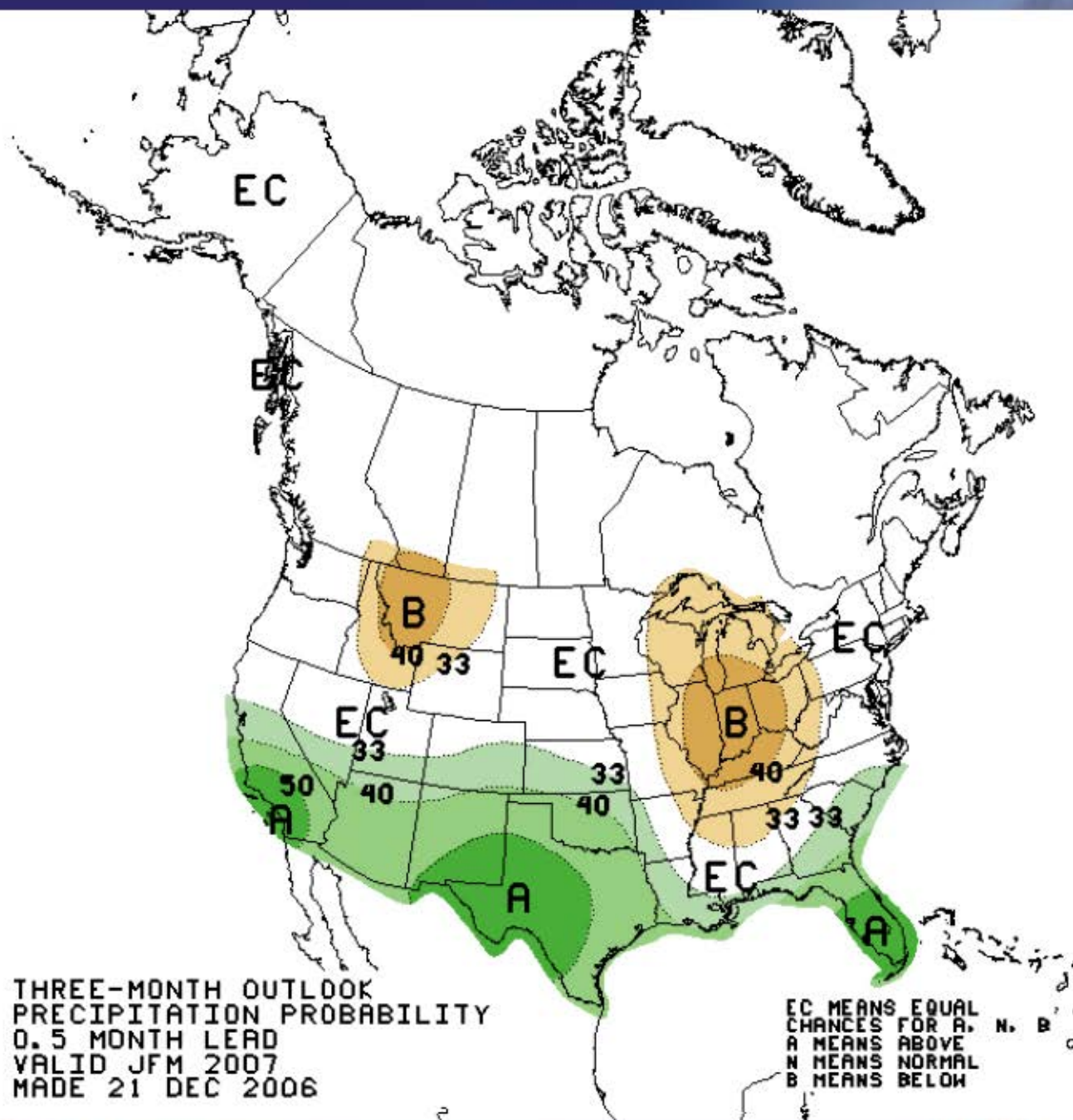


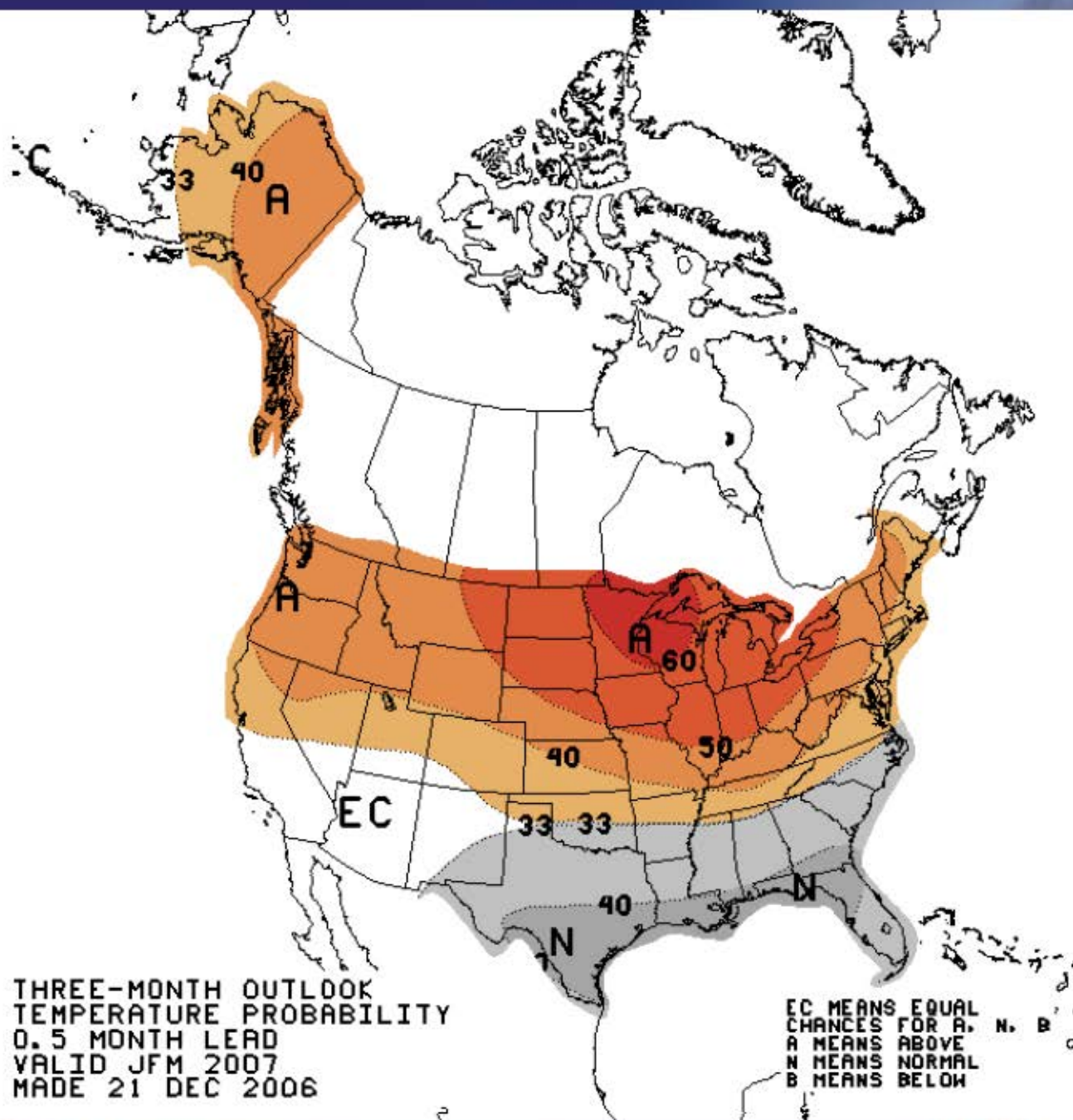
El Niño mean – Neutral mean



La Niña mean – Neutral mean







THREE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
0.5 MONTH LEAD
VALID JFM 2007
MADE 21 DEC 2006

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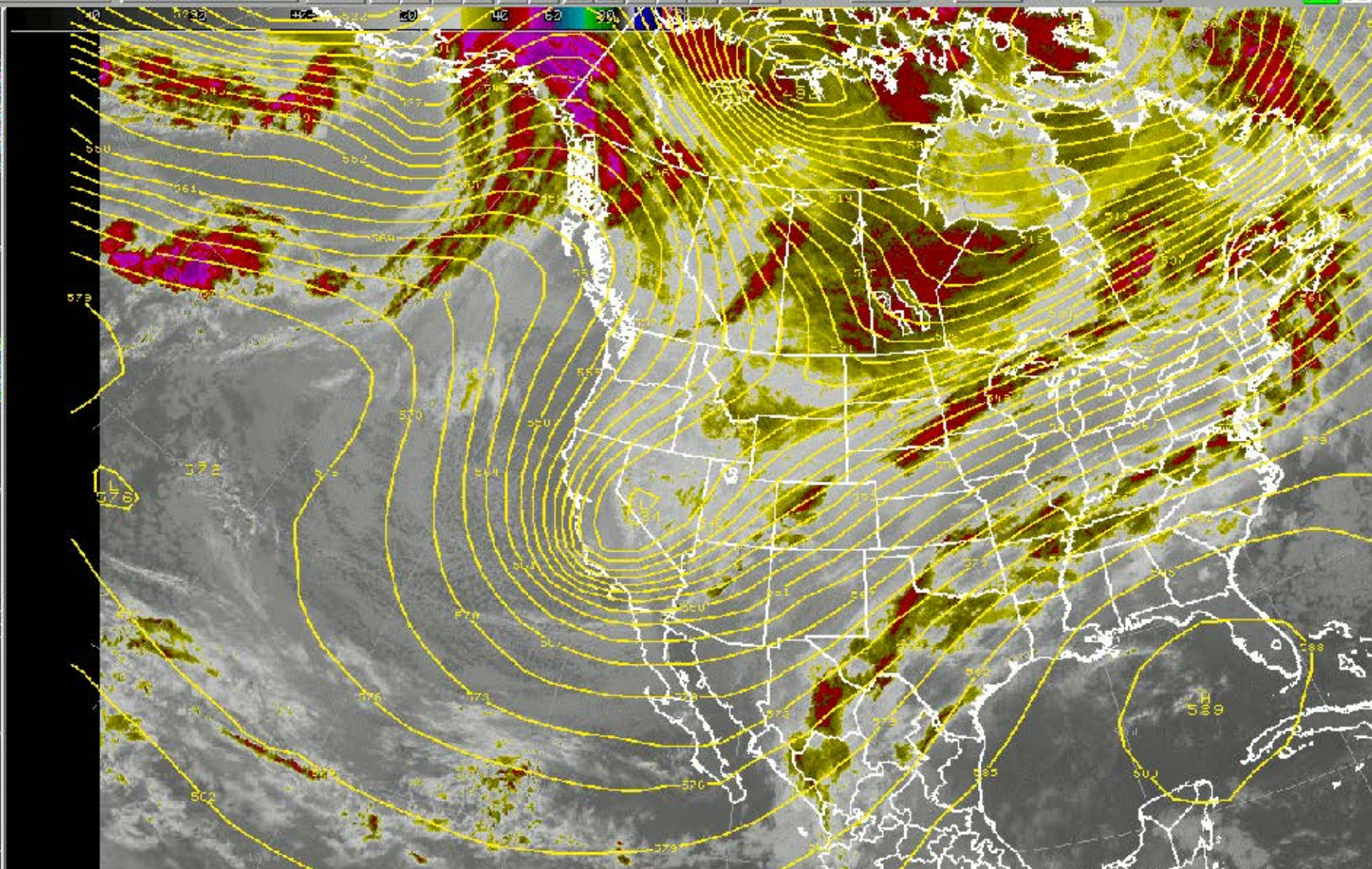
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Frames: 21

Mag: 1

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FF 13



Variable	Unit	Time	Date
gfsLR Precipitation	(in)	12.00	12-Jan-07
gfsLR Layer Rel Humidity	(%)	12.00	12-Jan-07
gfsLR MSL Pressure	(mb)	12.00	12-Jan-07
gfsLR 500mb Height	(dam)	12.00	12-Jan-07



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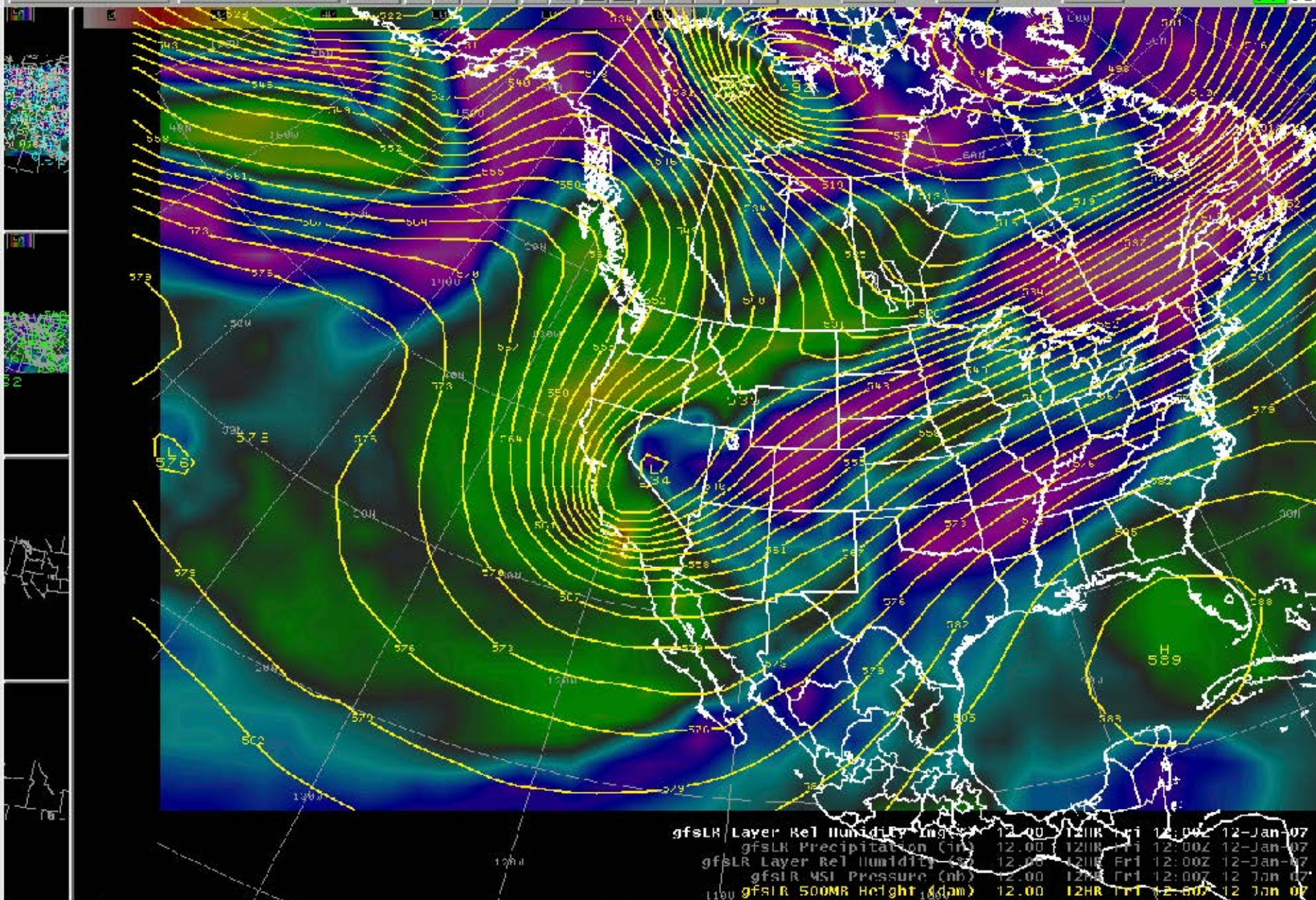
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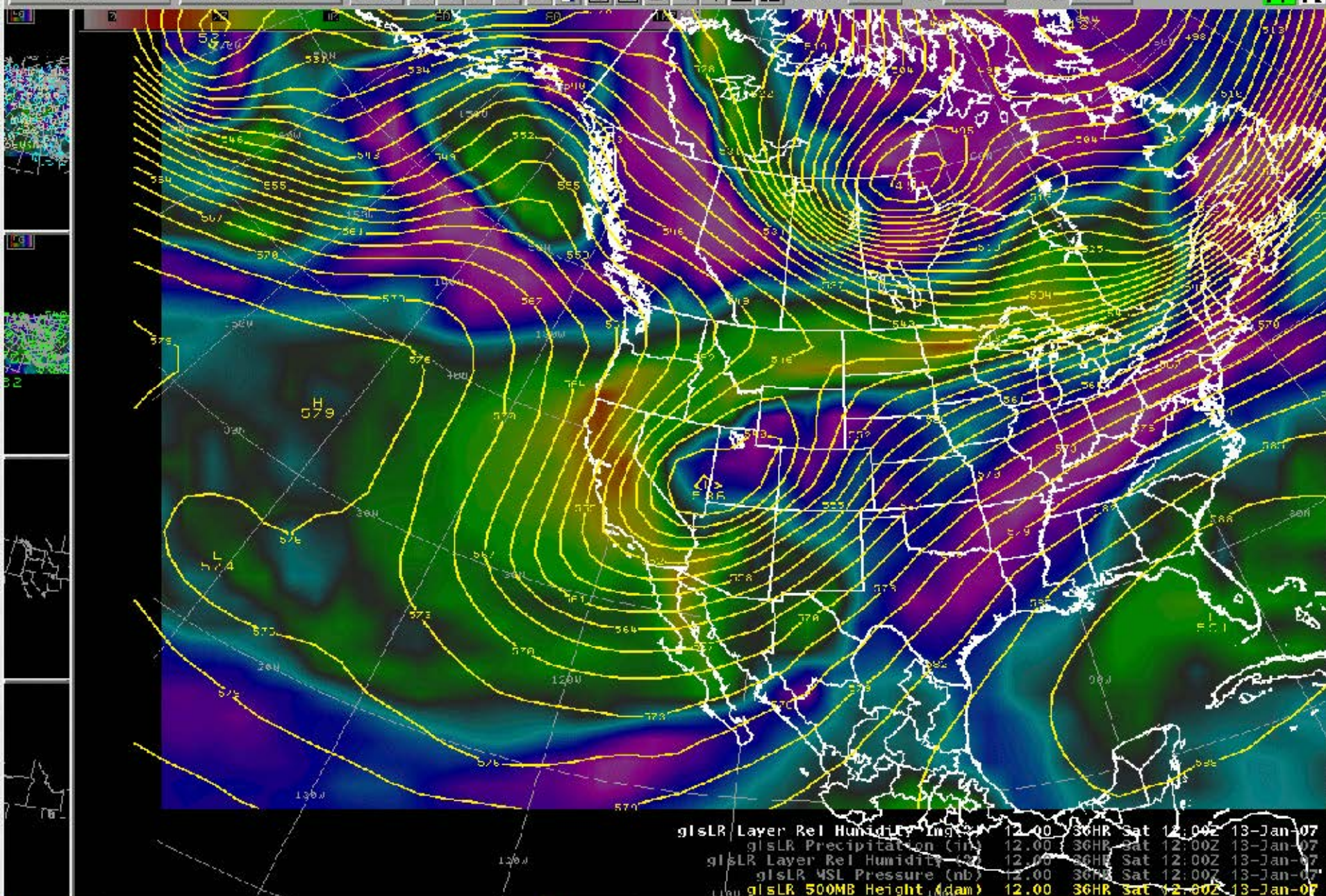
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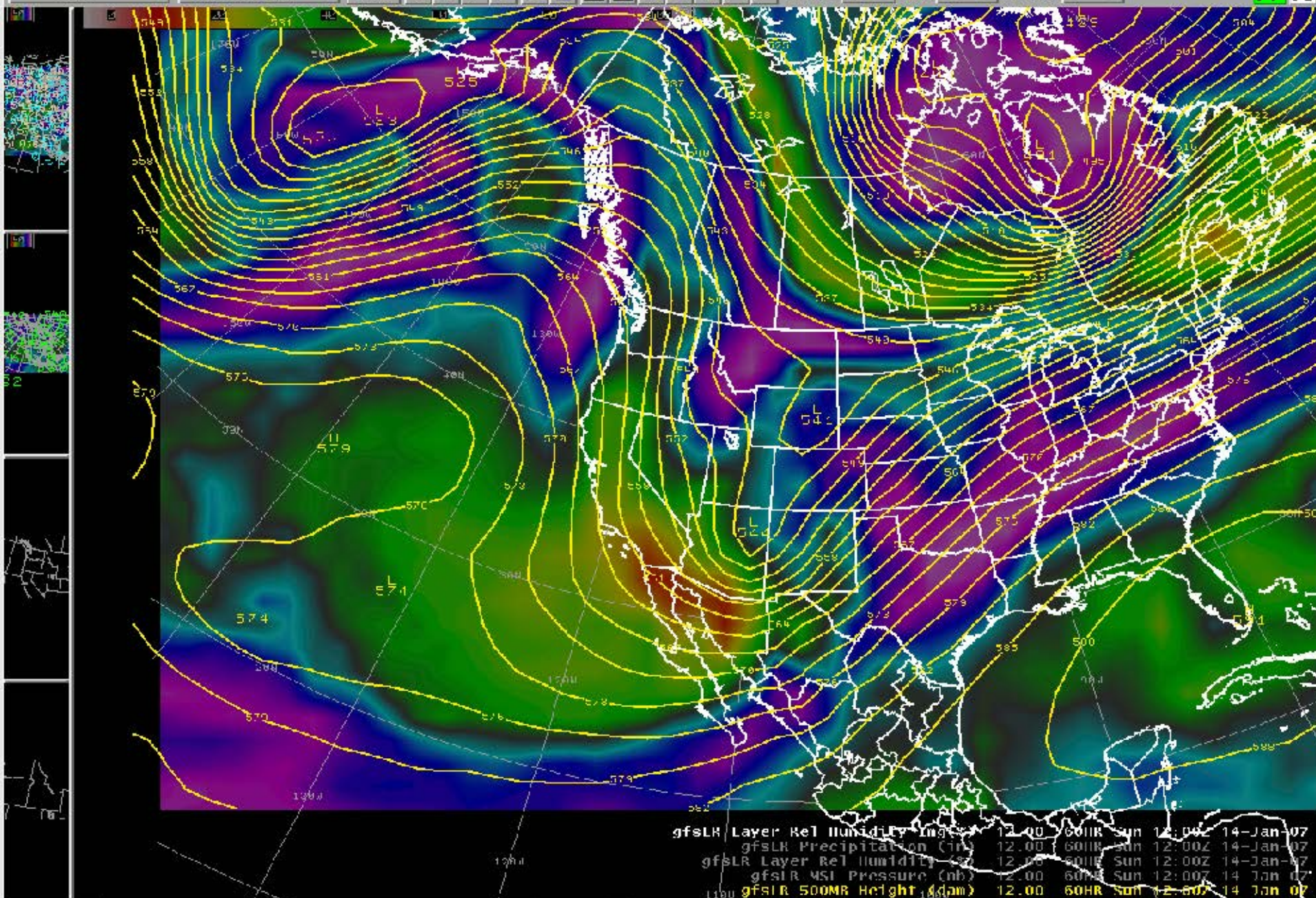
Frames: 21

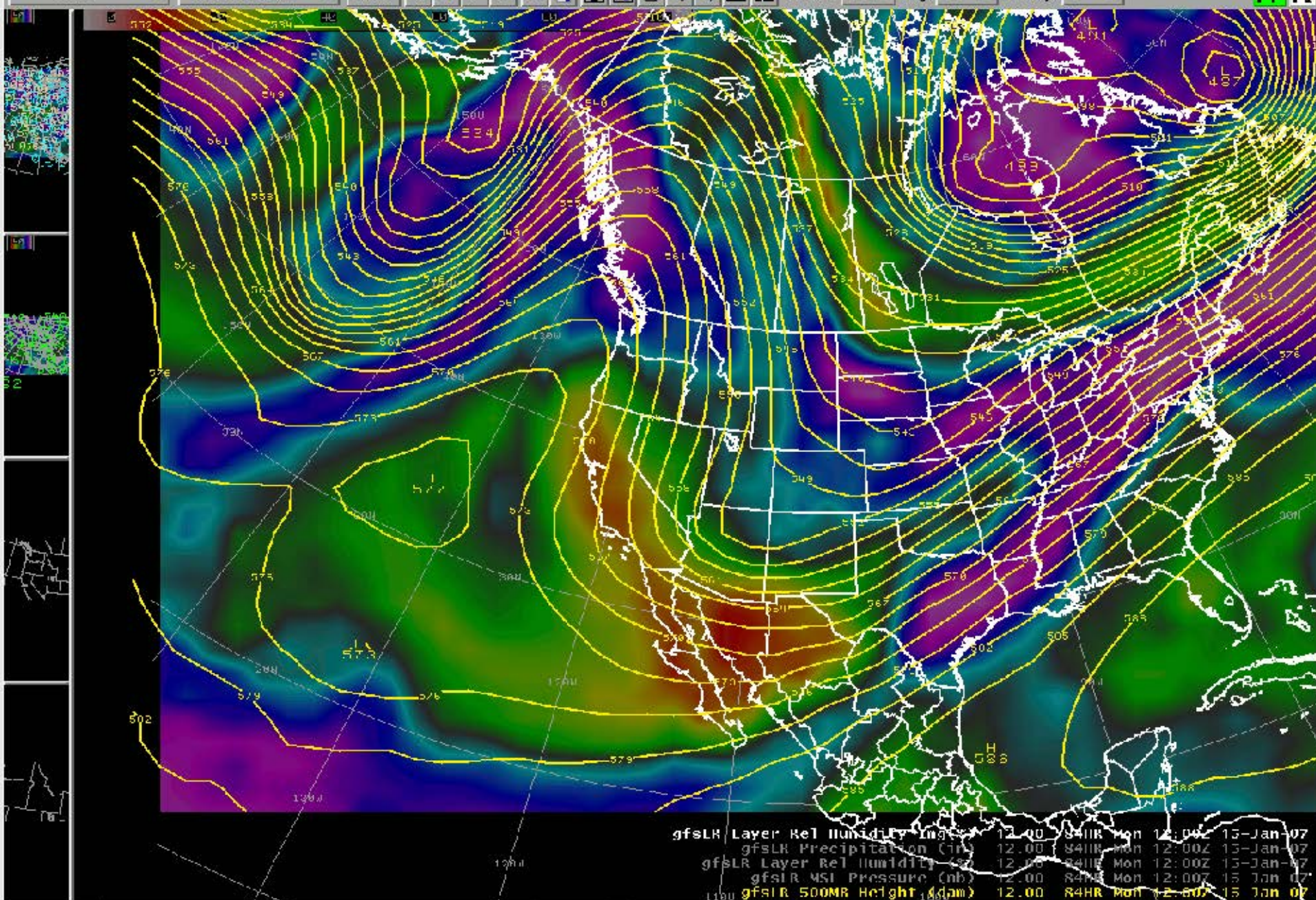
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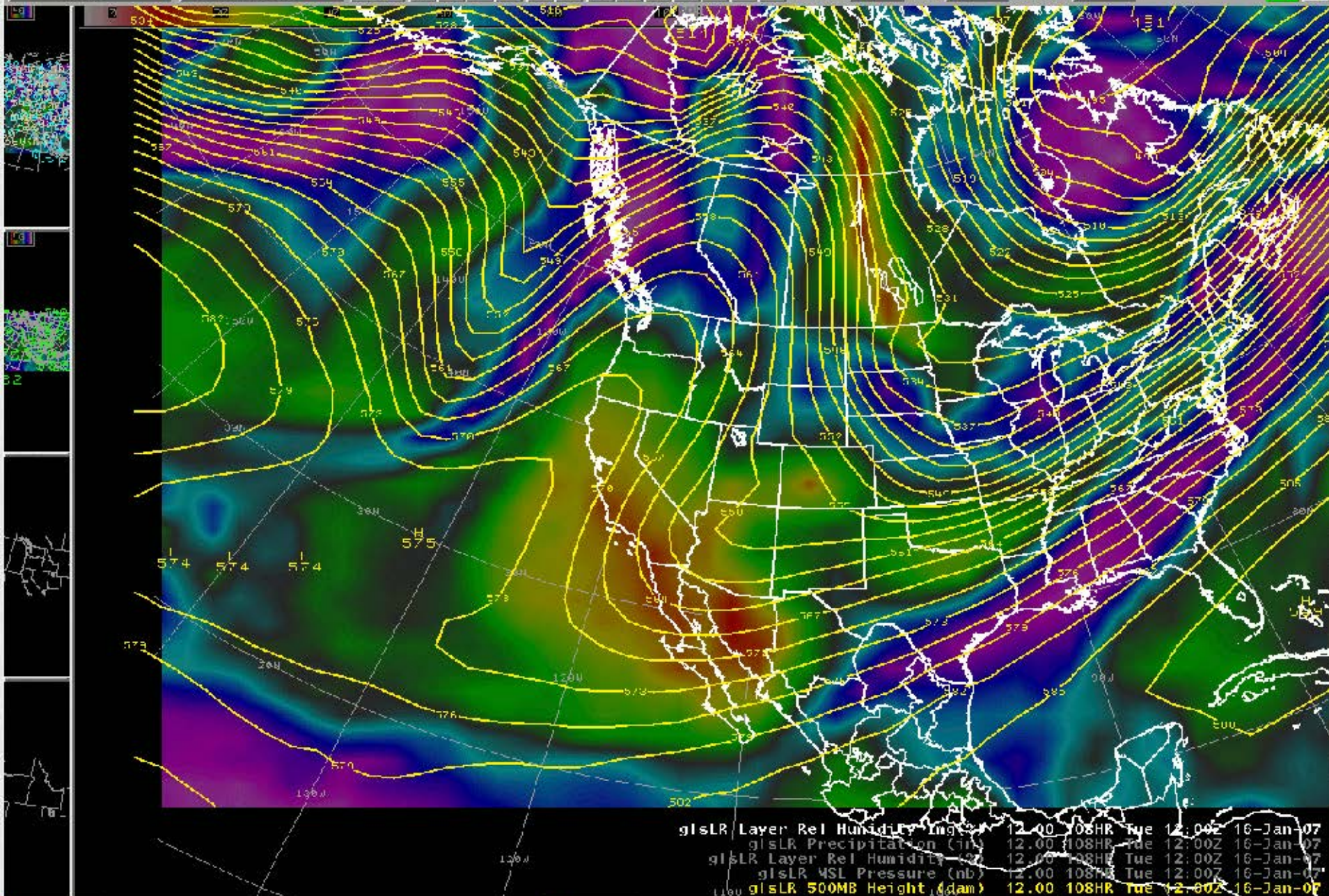
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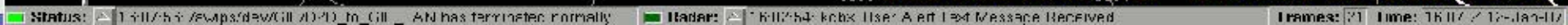
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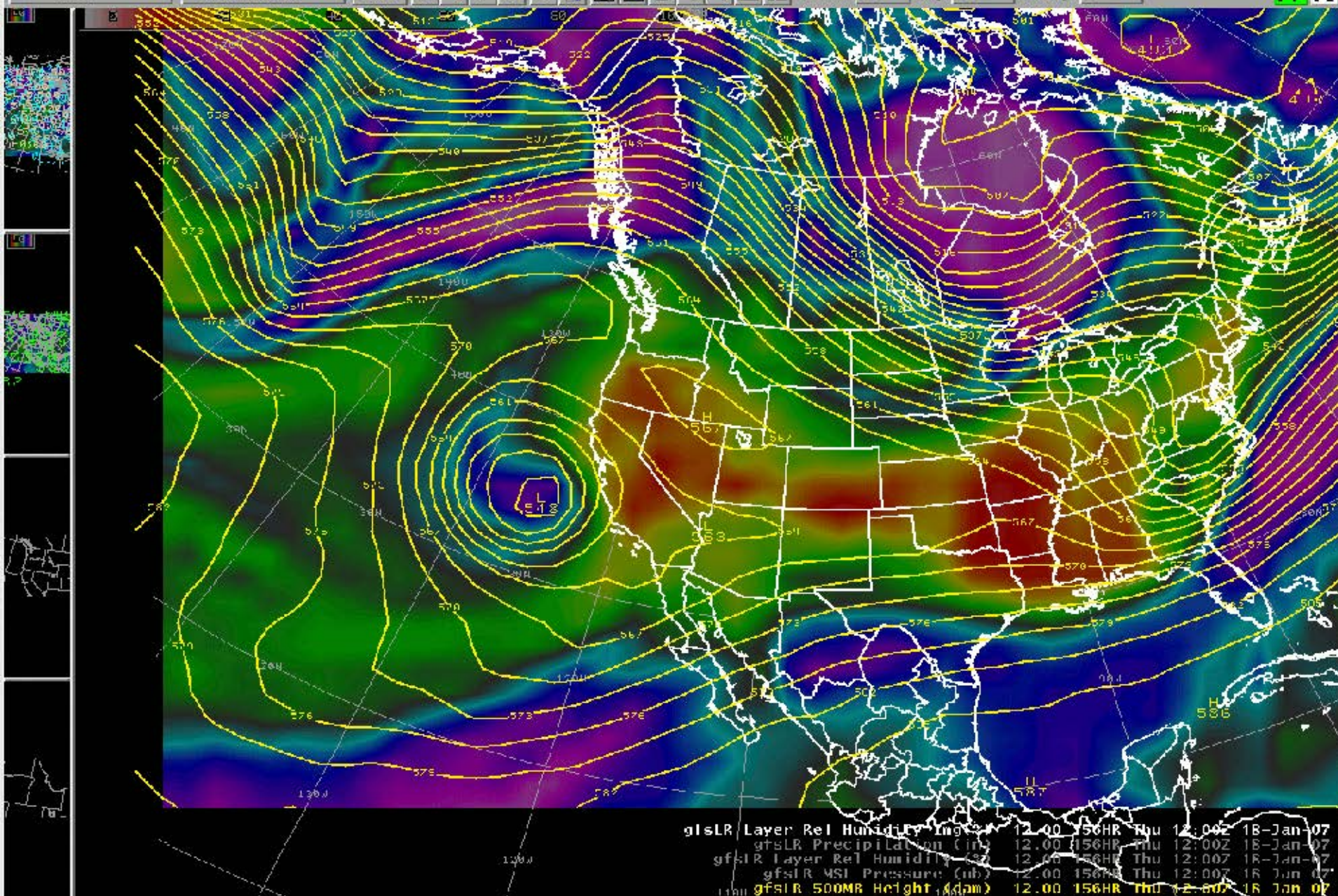
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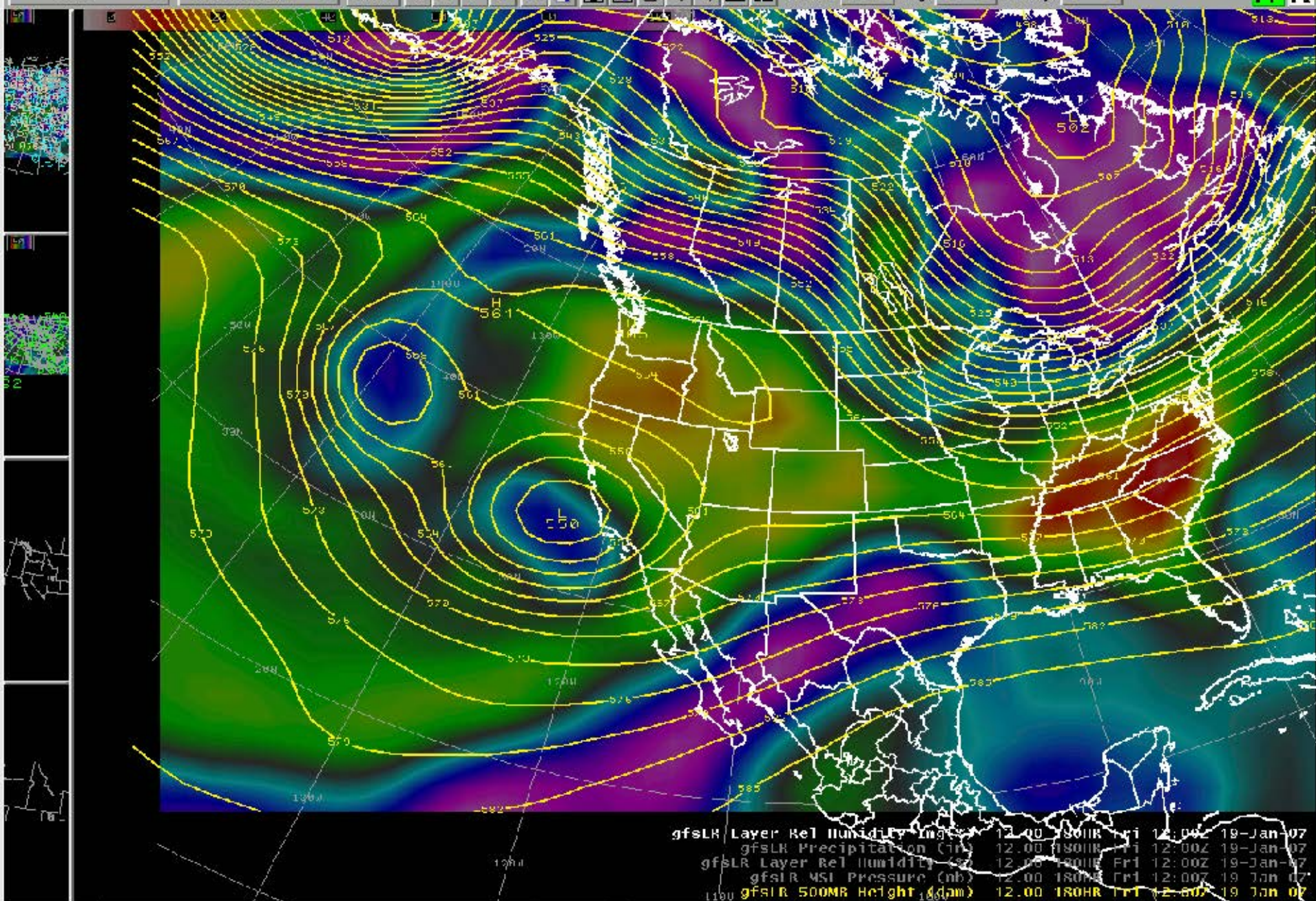
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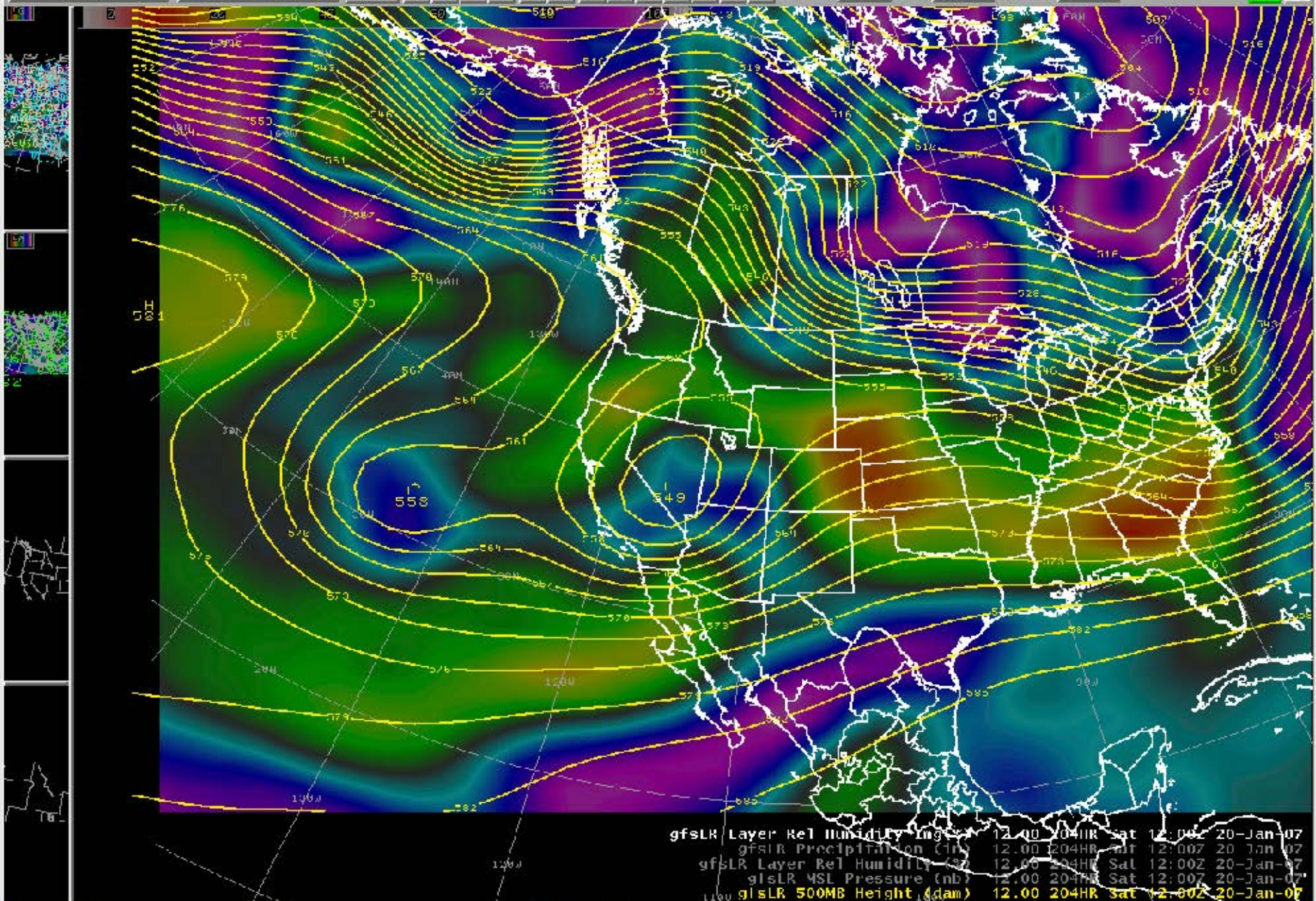
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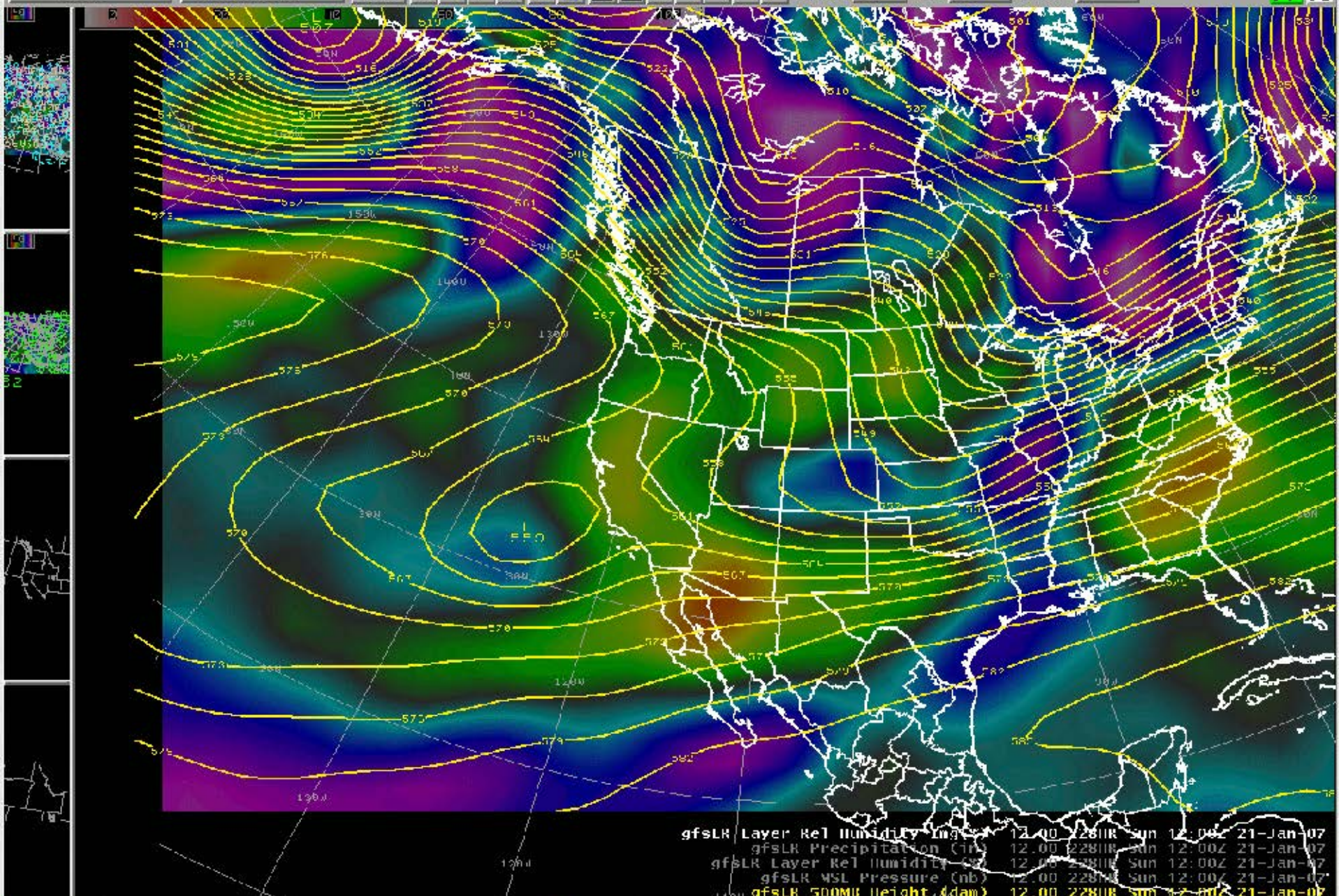
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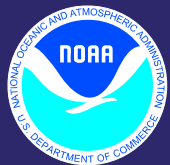
Frames: 21

Mag: 1

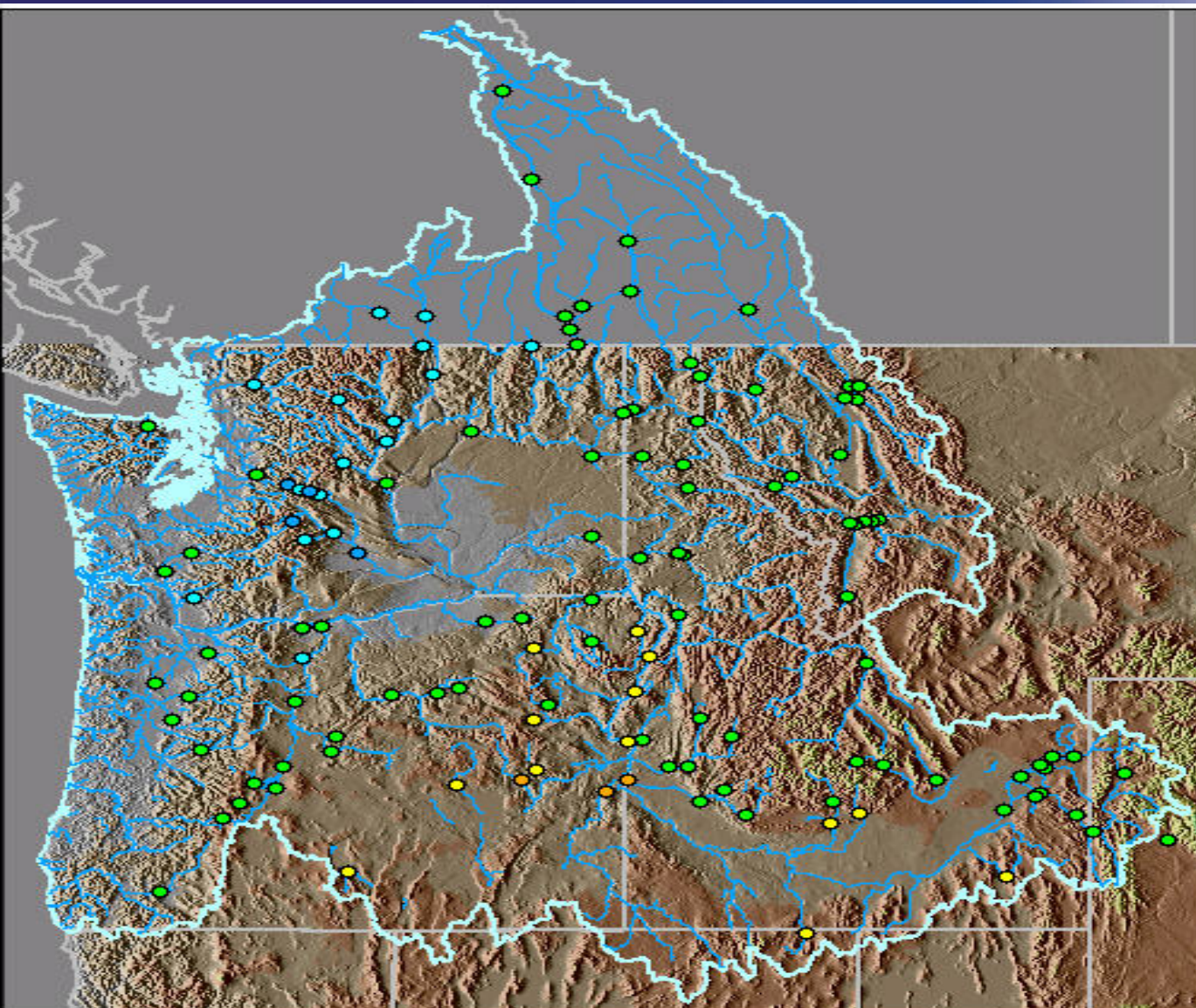
Density: 1

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www.nwrfc.noaa.gov/water_supply/ws_fcst.cgi



Legend

Water Supply Forecast (% Avg)

- ☐ No Average, No data
- < 25
- 25-50
- 50-75
- 75-90
- 90-110
- 110-125
- 125-150
- 150-175
- > 175

Point Info/Search

Station Name

ID

Forecast Period

Volume Forecast (KAF)

% of Avg (1971-2000)

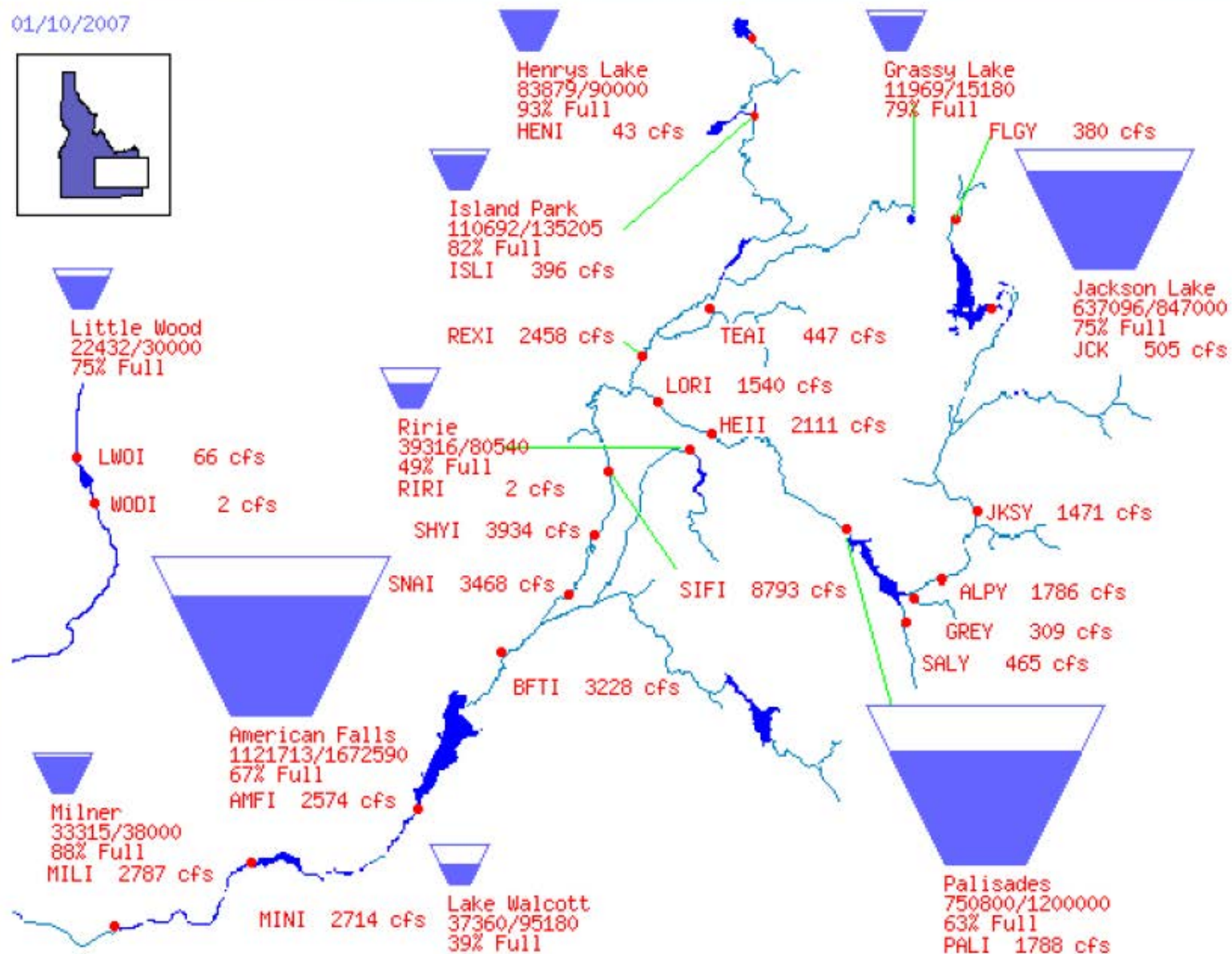
10% Forecast (KAF)

90% Forecast (KAF)

30-YR Avg (KAF)

Search

01/10/2007



RECLAMATION

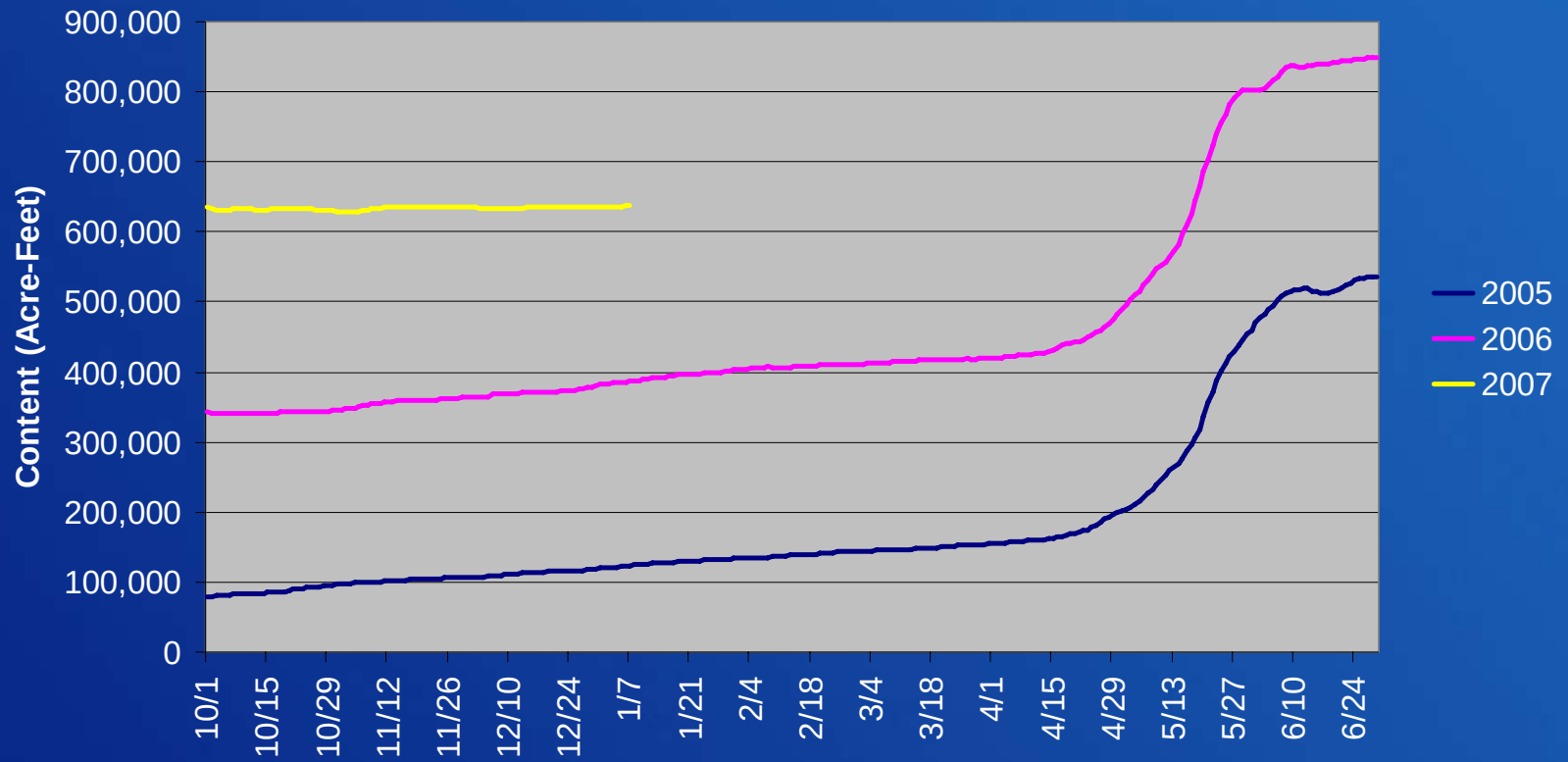
Snake River above Heise

Unregulated Runoff, April through July



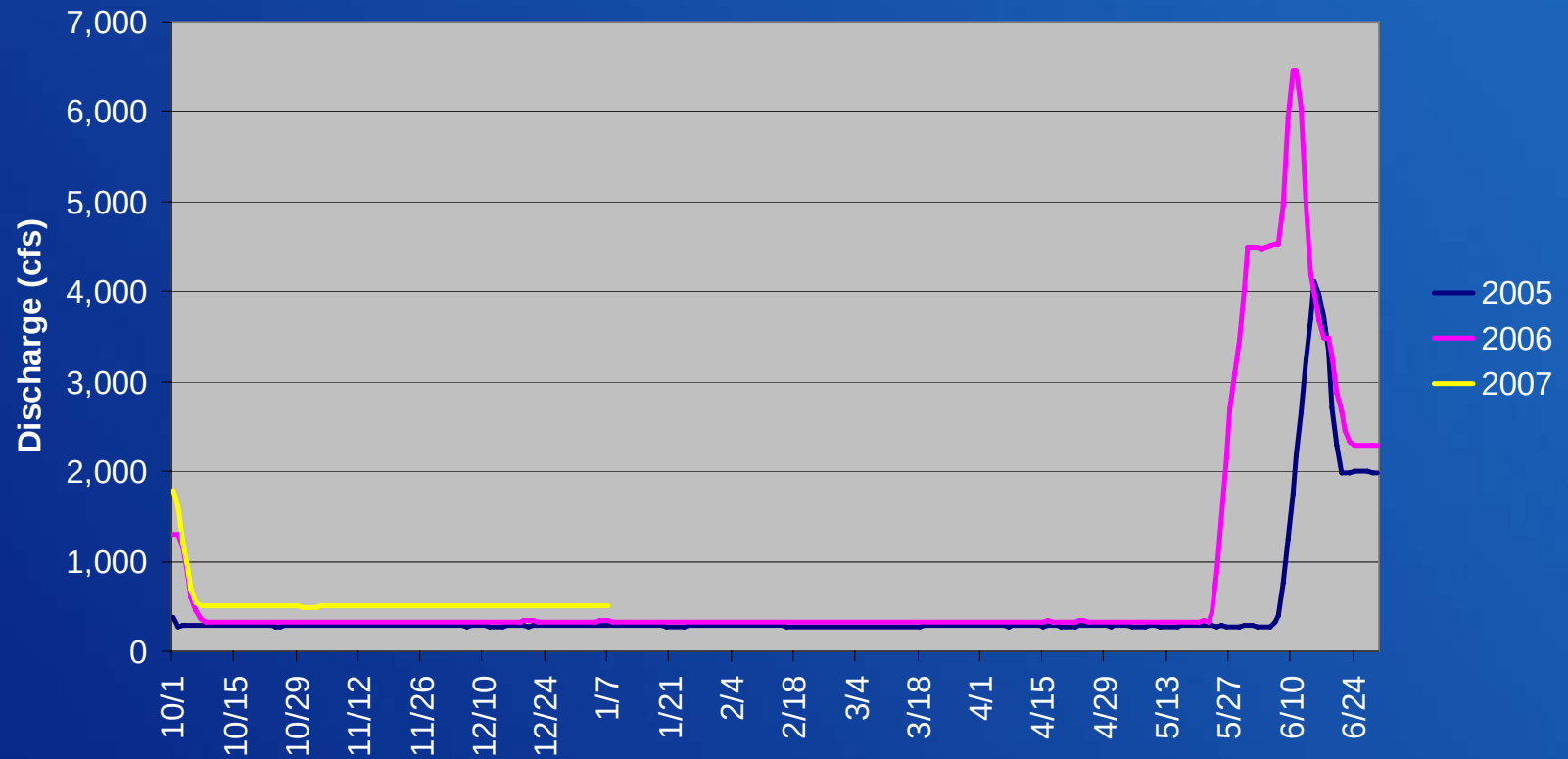
RECLAMATION

Jackson Lake



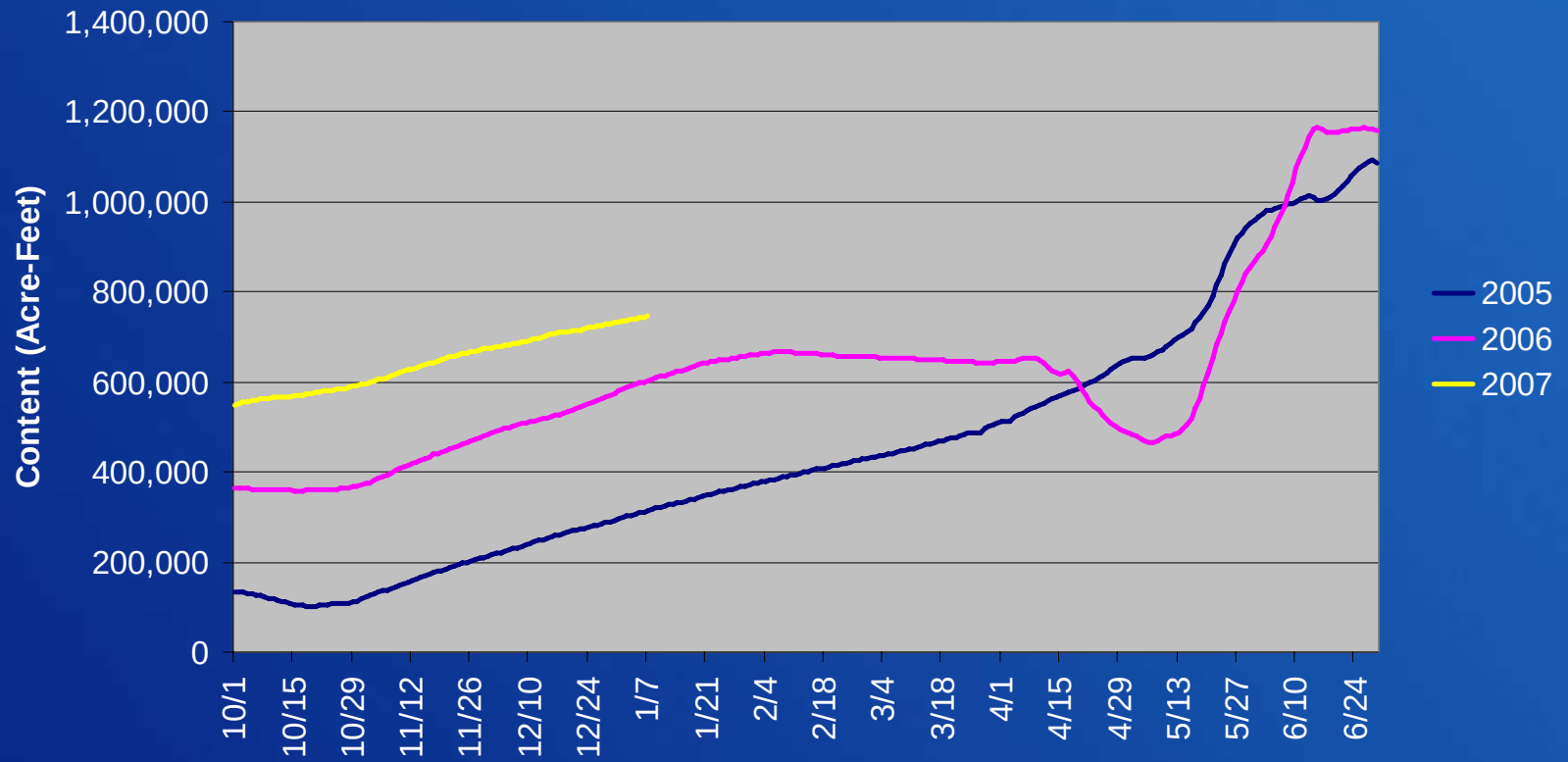
RECLAMATION

Snake River at Moran



RECLAMATION

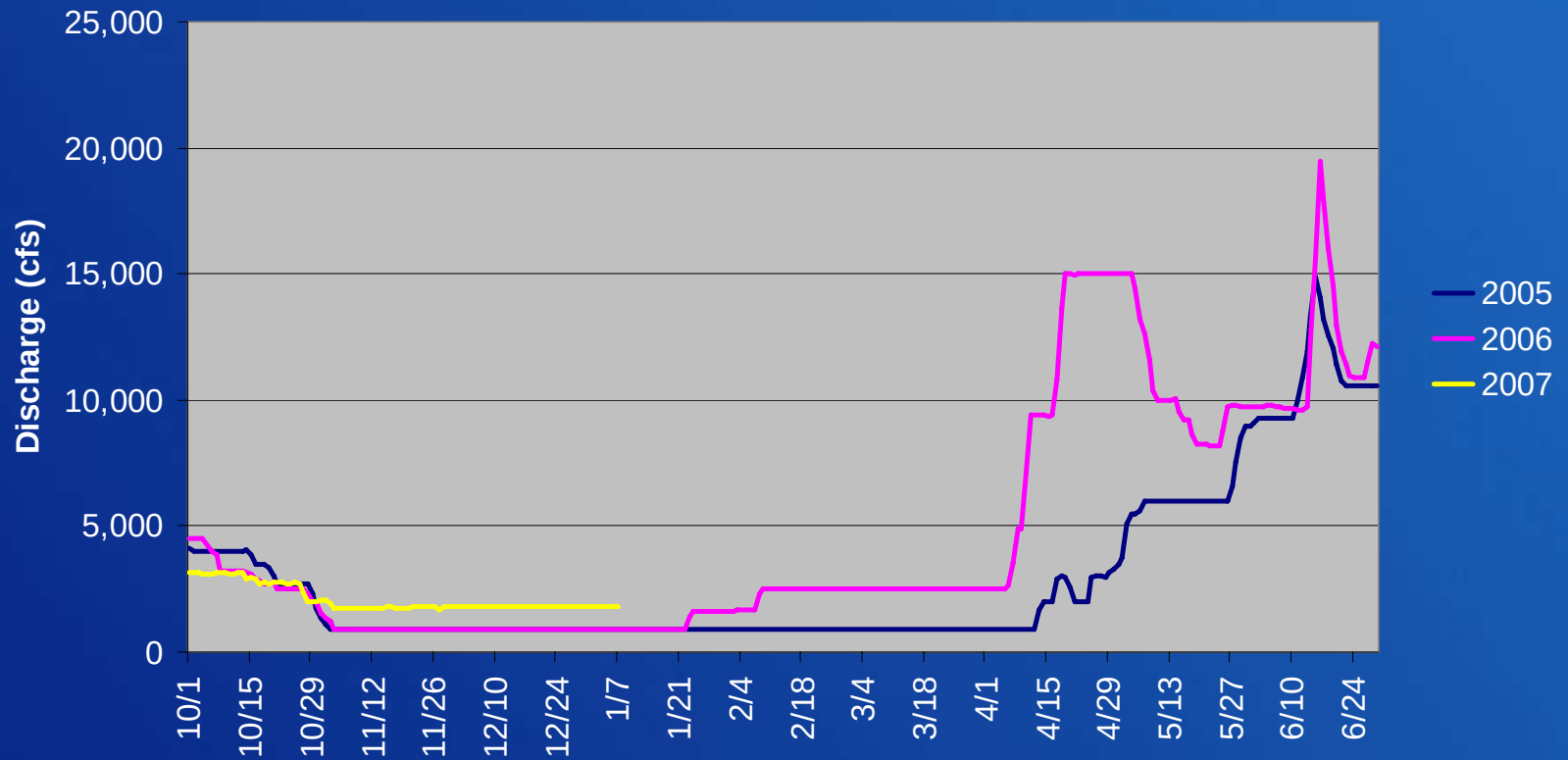
Palisades Reservoir



RECLAMATION

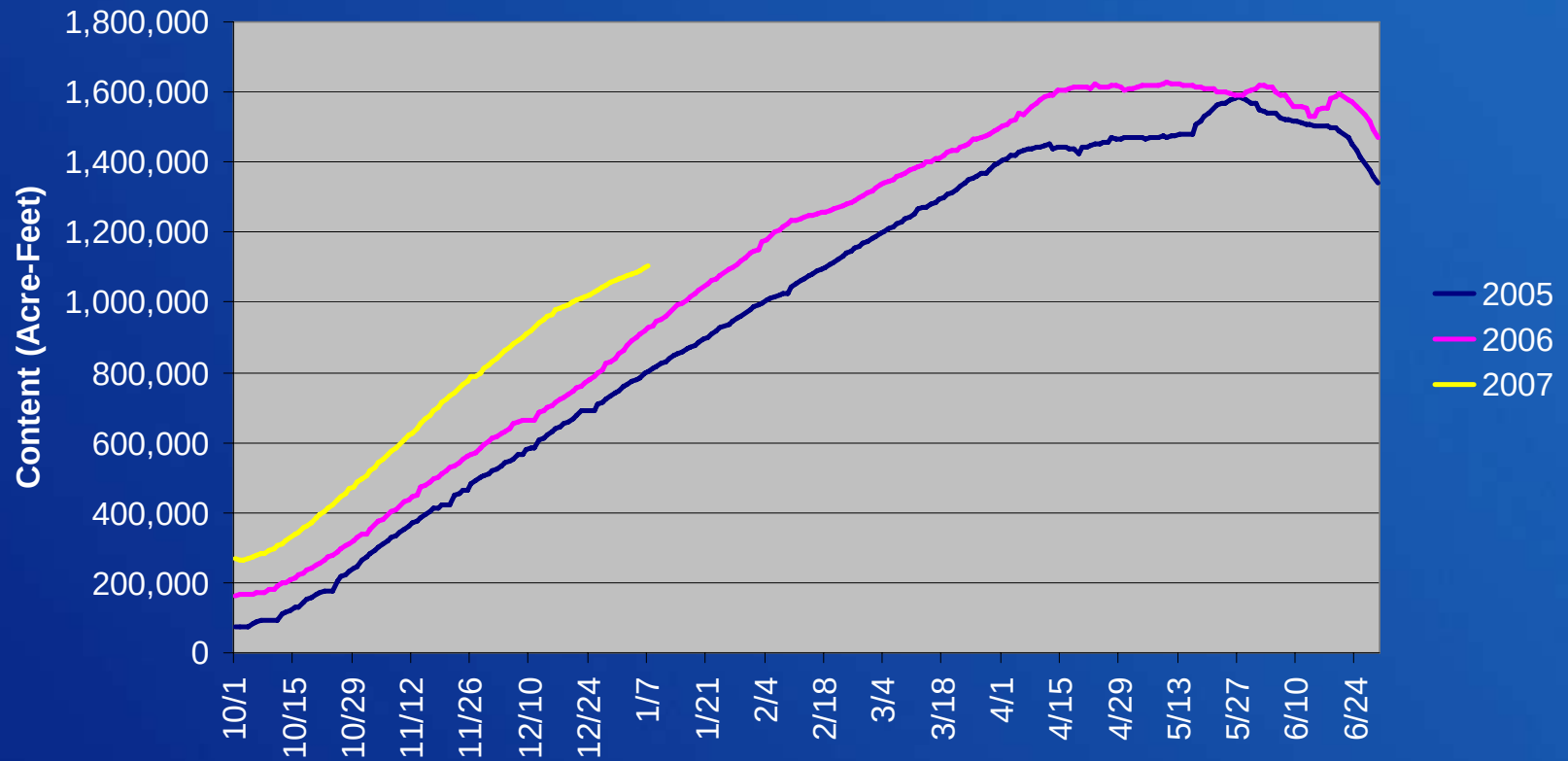


Snake River at Irwin



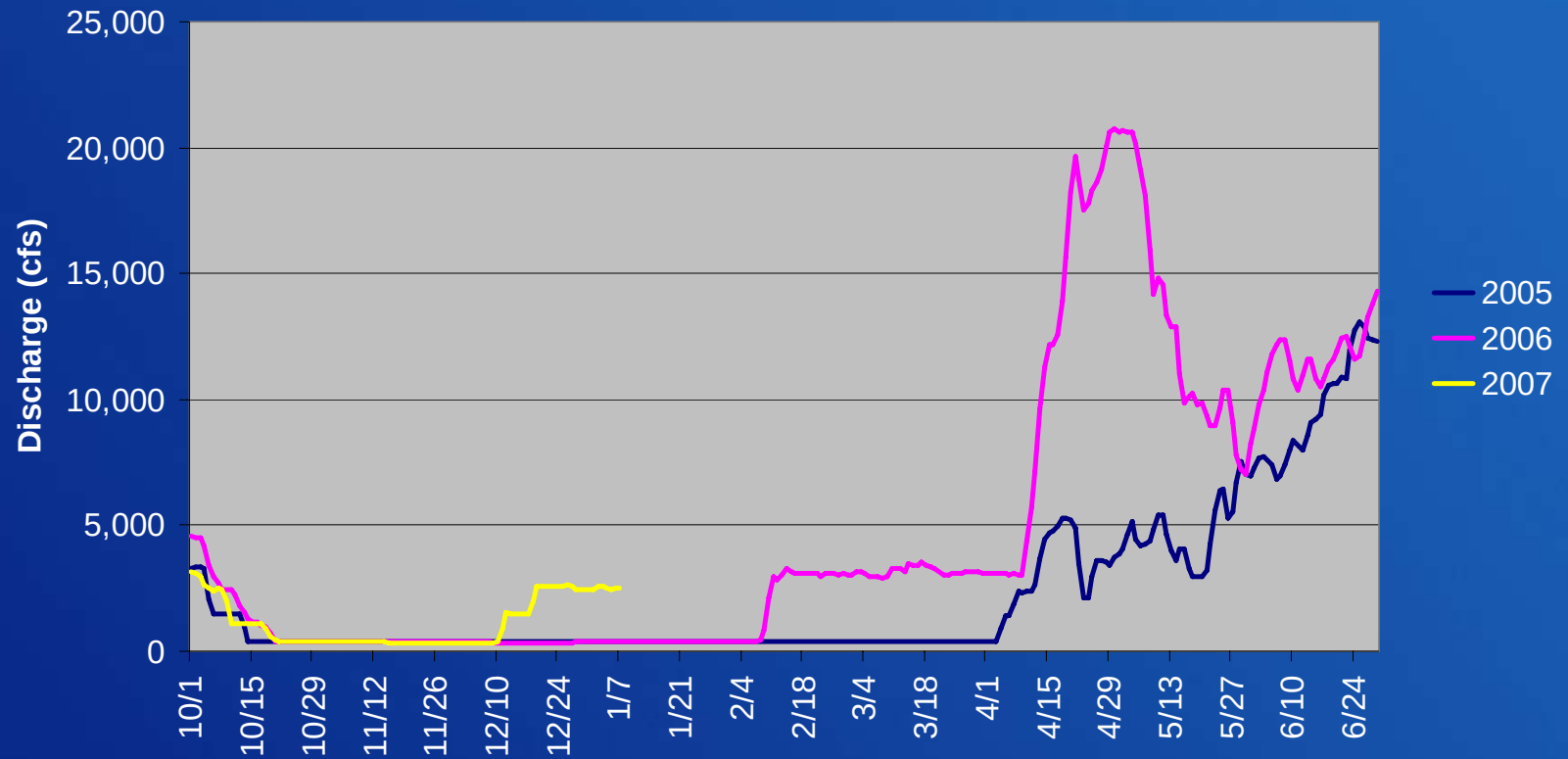
RECLAMATION

American Falls Reservoir



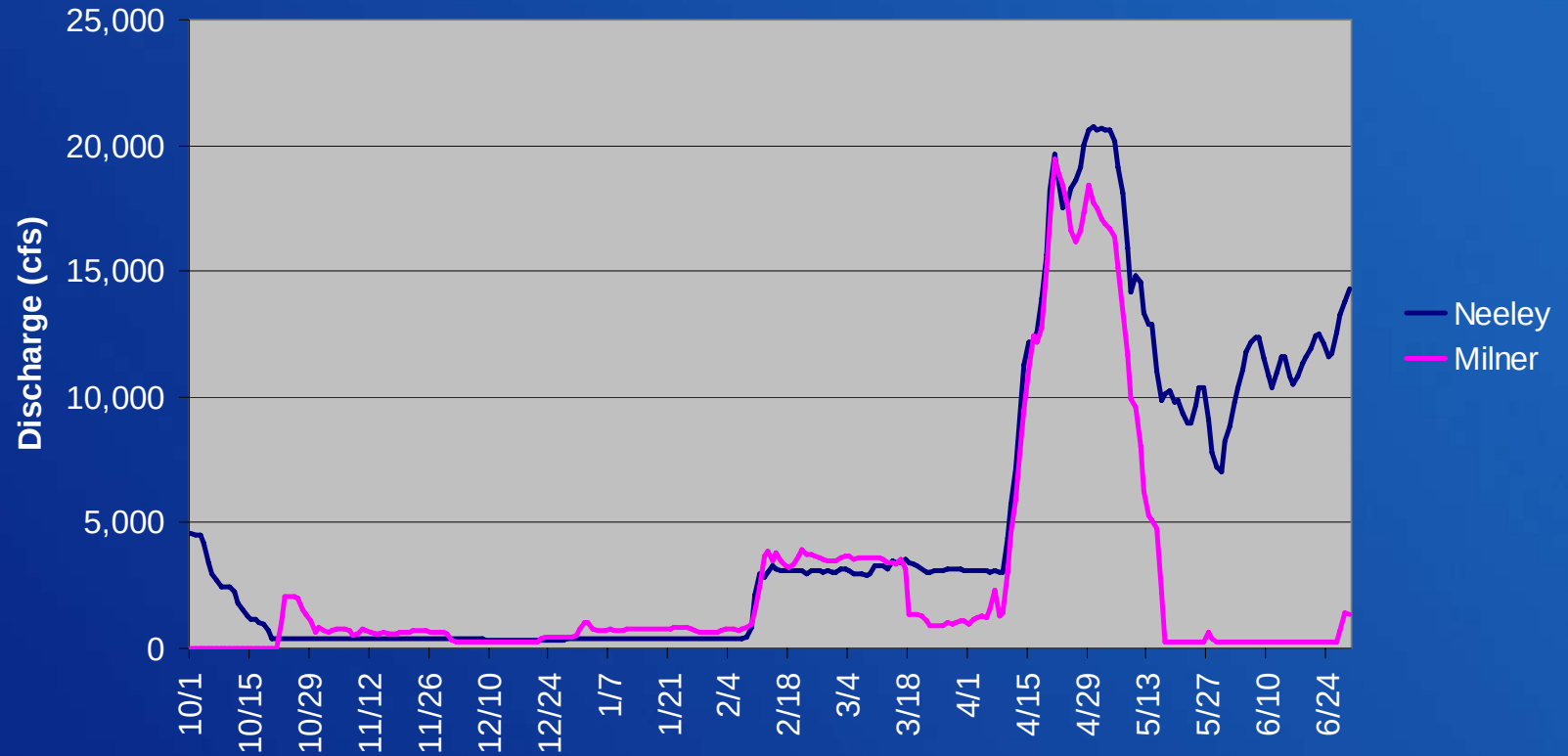
RECLAMATION

Snake River at Neeley



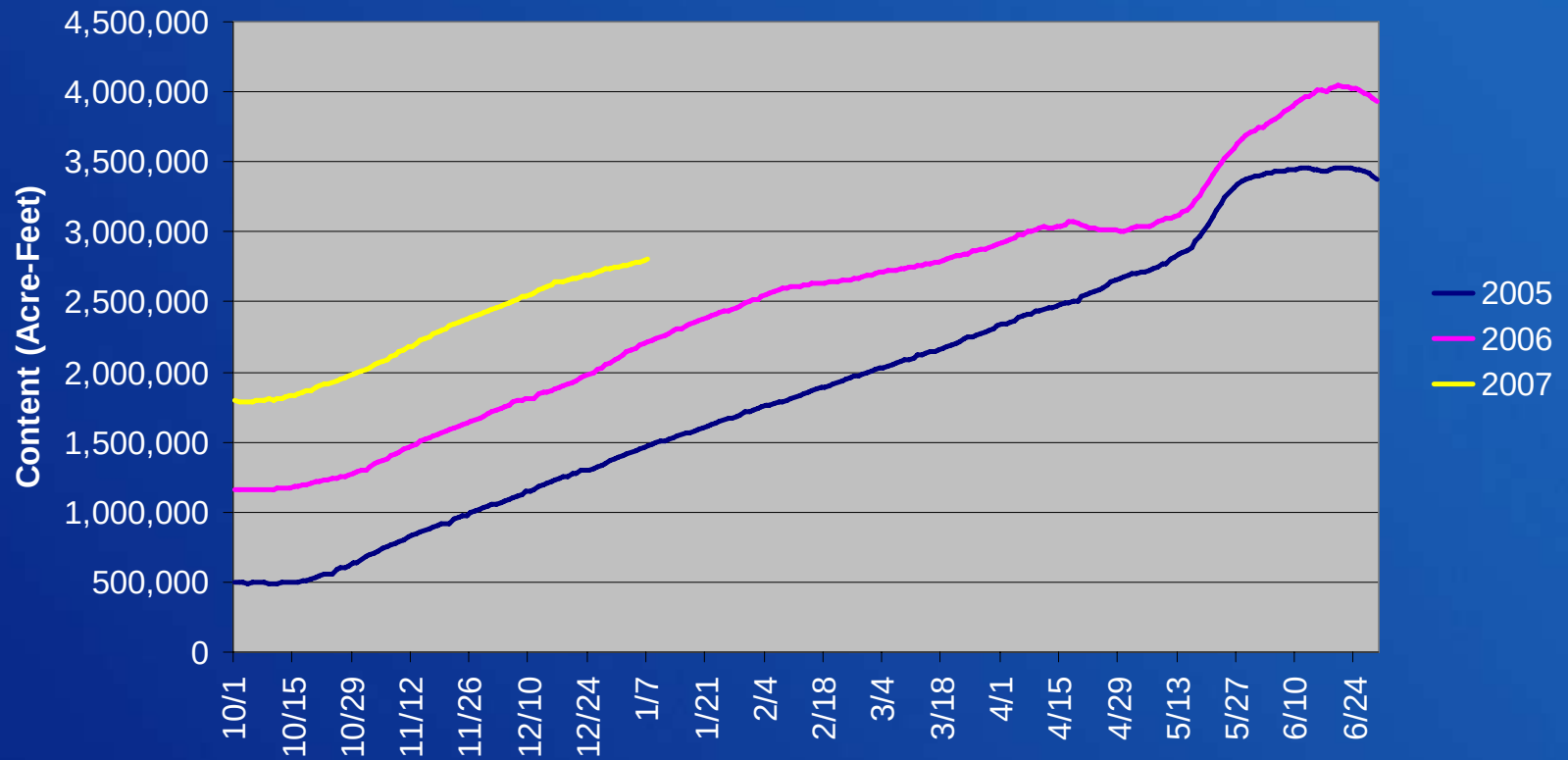
RECLAMATION

Snake River Flow



RECLAMATION

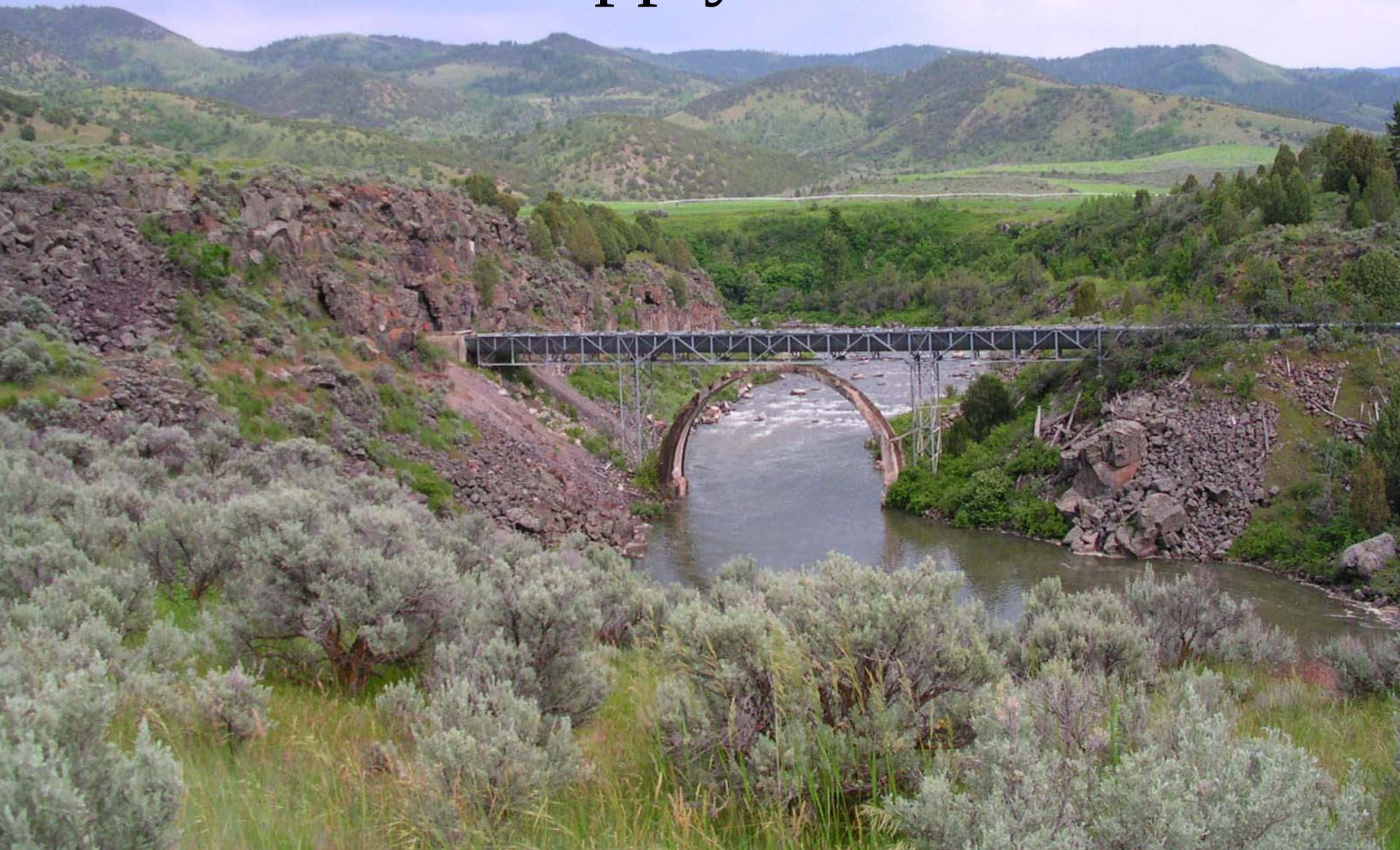
Upper Snake Total Storage



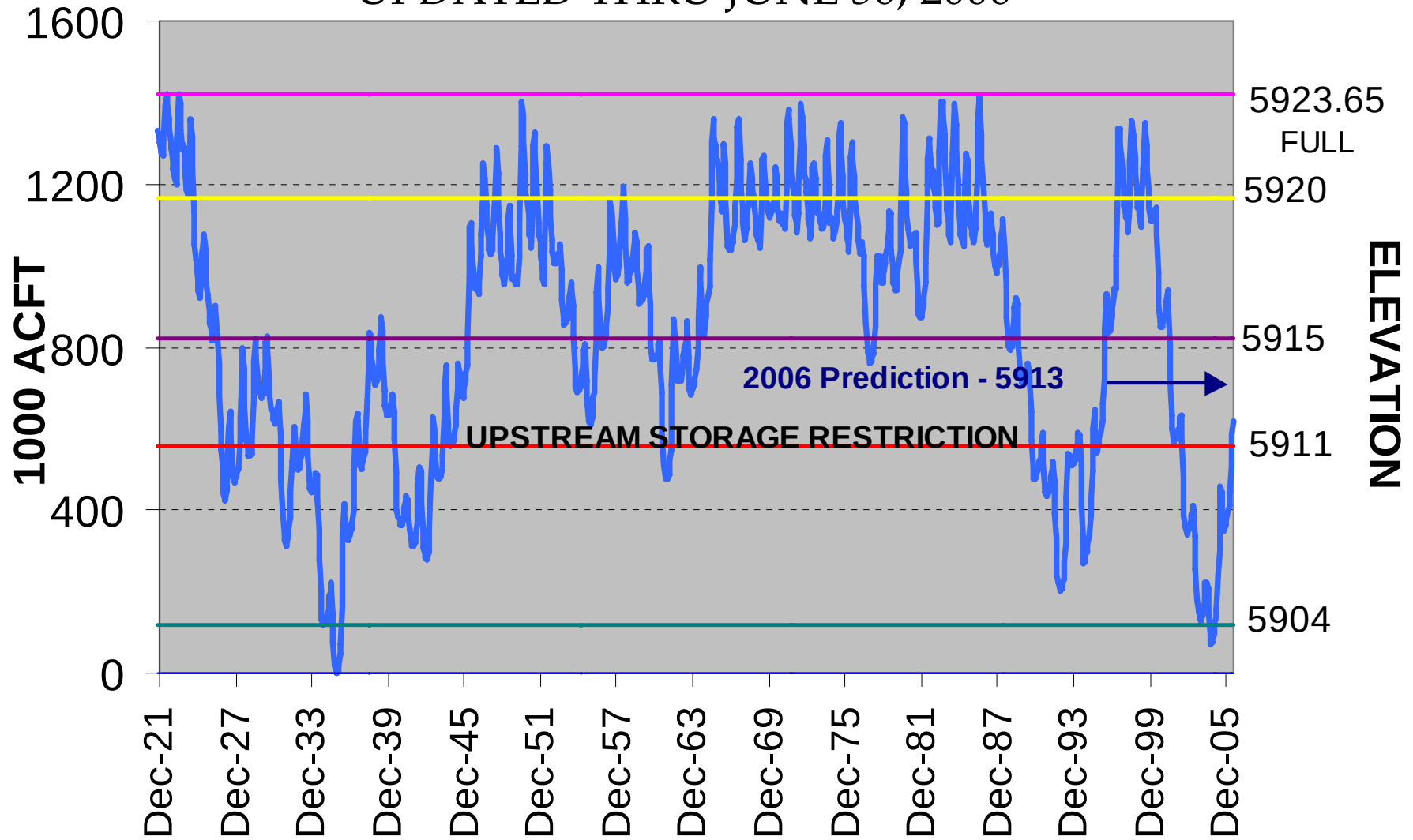
RECLAMATION



January 2007 Water Supply Committee

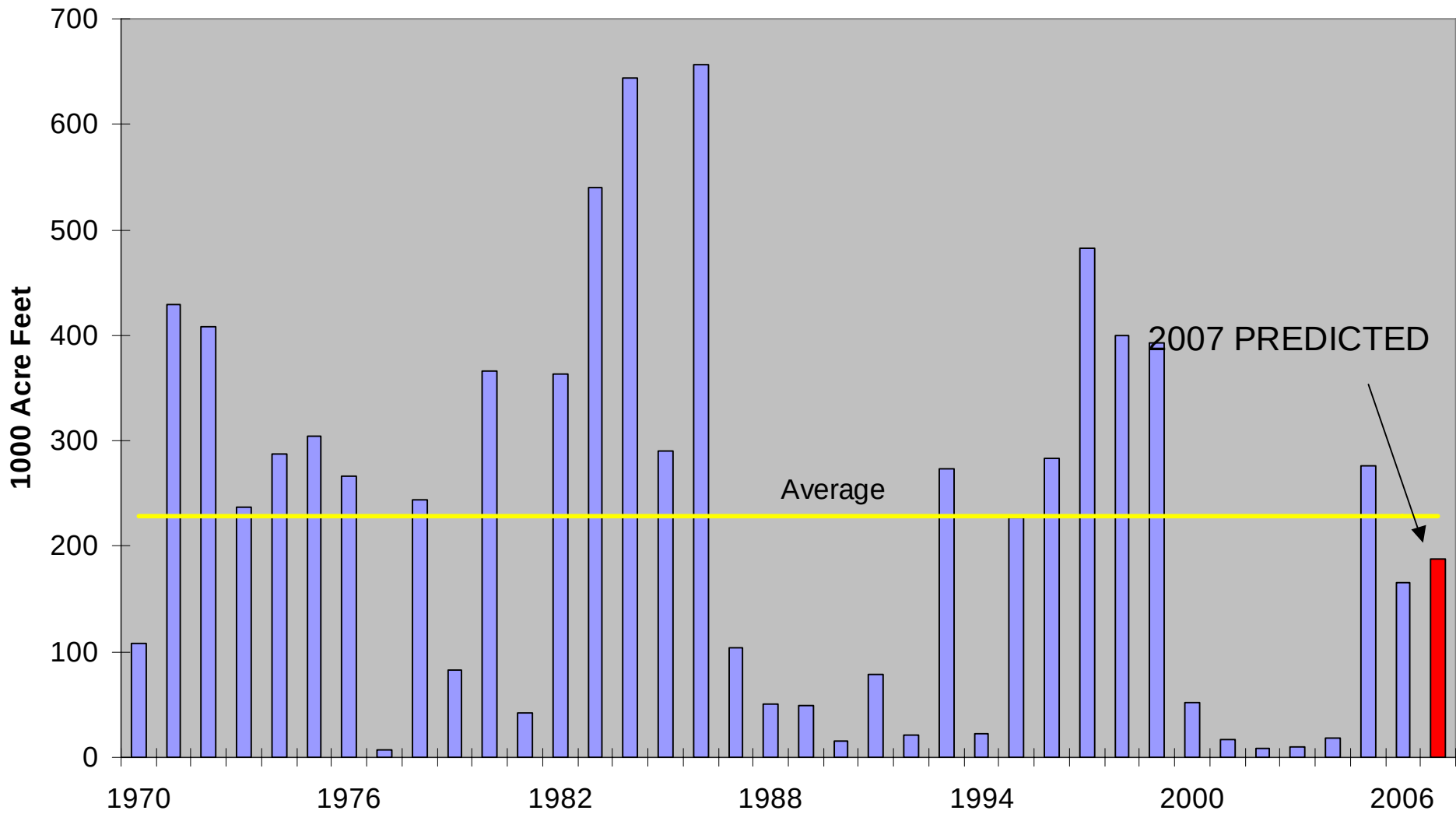


BEAR LAKE END OF MONTH STORAGE
WATER YEARS 1922-2005
UPDATED THRU JUNE 30, 2006



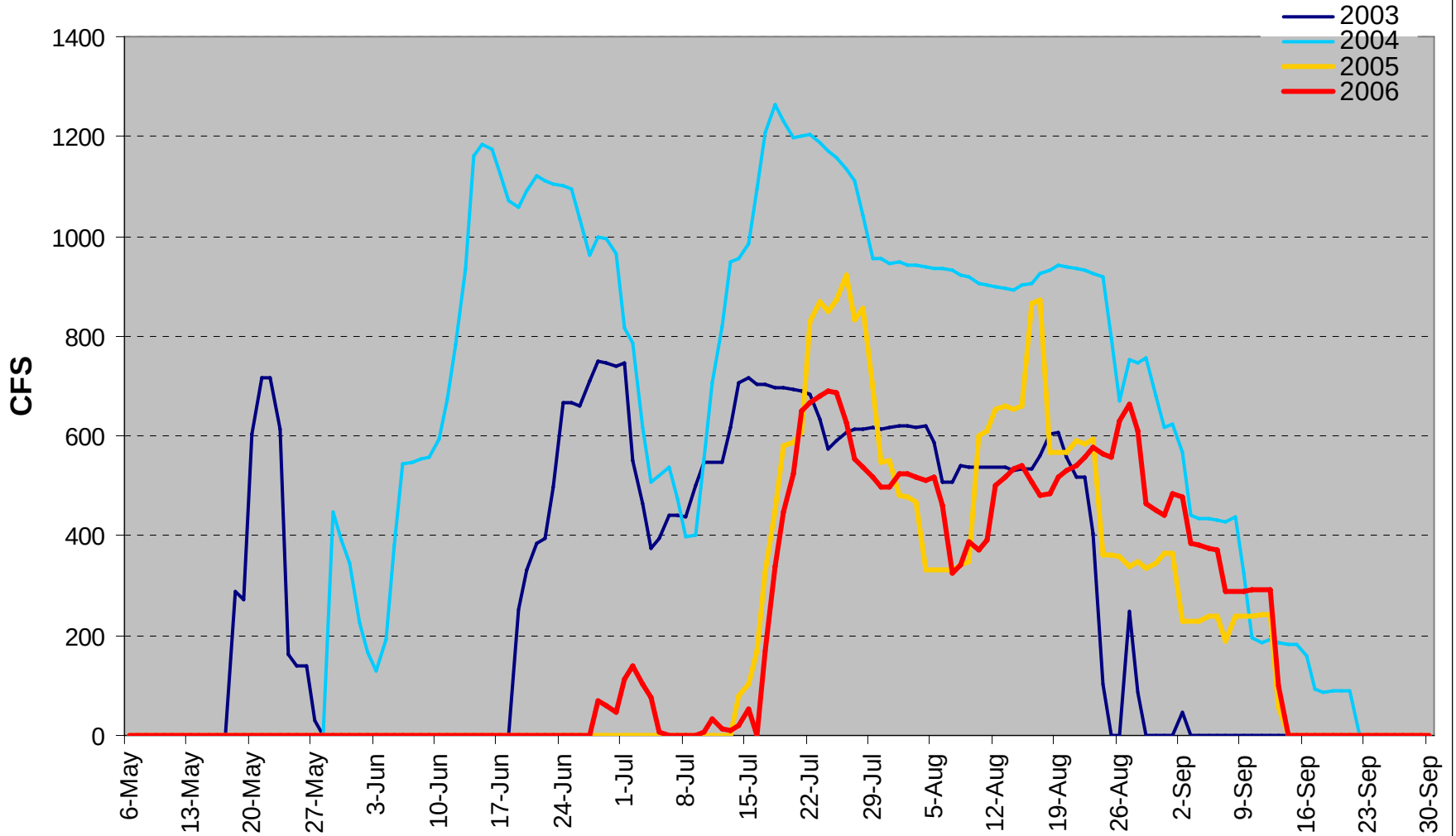
Bear Lake Inflow

APRIL THROUGH SEPTEMBER RAINBOW INLET CANAL VOLUME



BEAR LAKE ADJUSTED STORAGE RELEASE

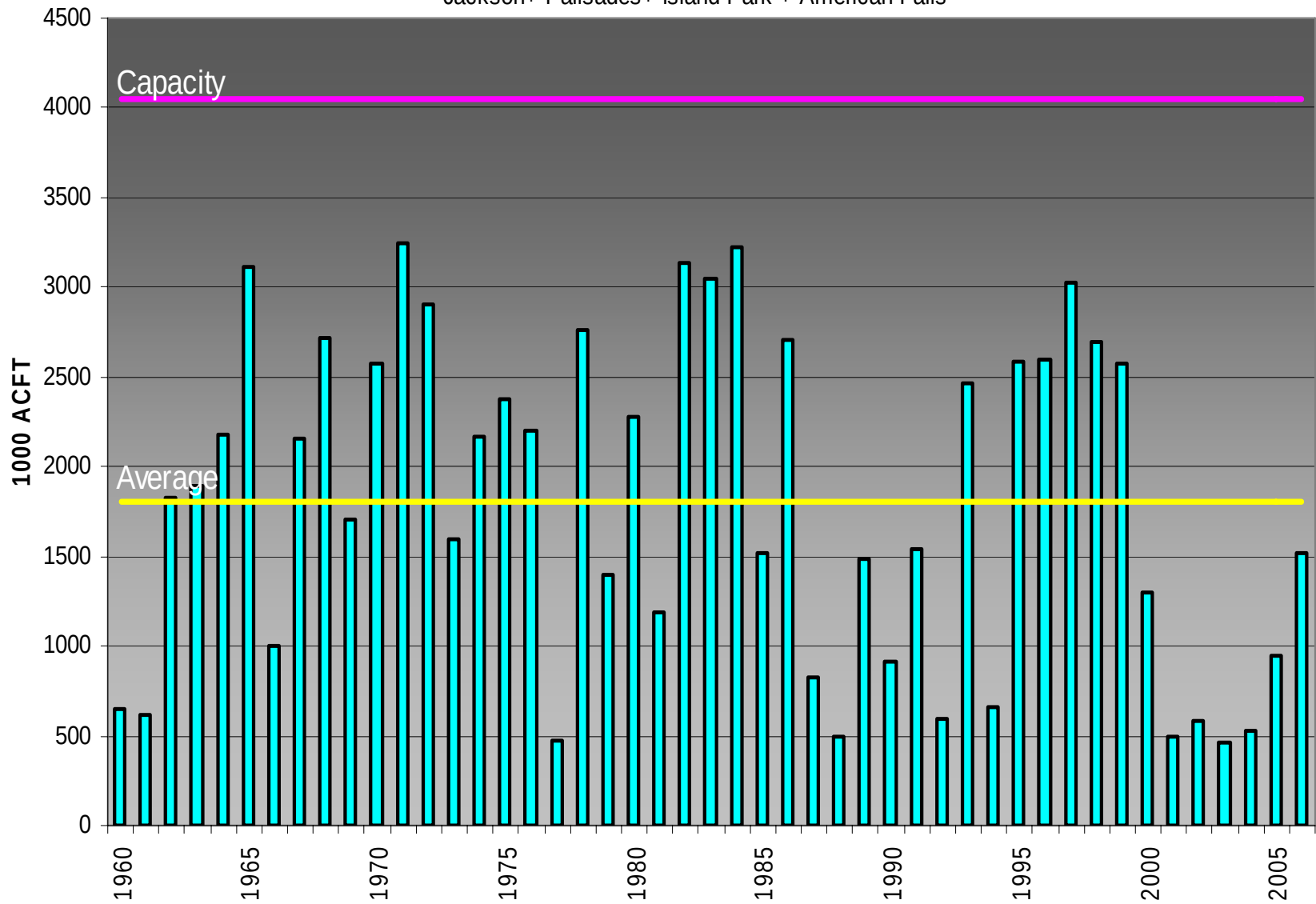
OUTLET CORRECTED FOR RAINBOW, DINGLE AND DECREE ADJUSTMENT



UPPER SNAKE RIVER RESERVOIR SYSTEM

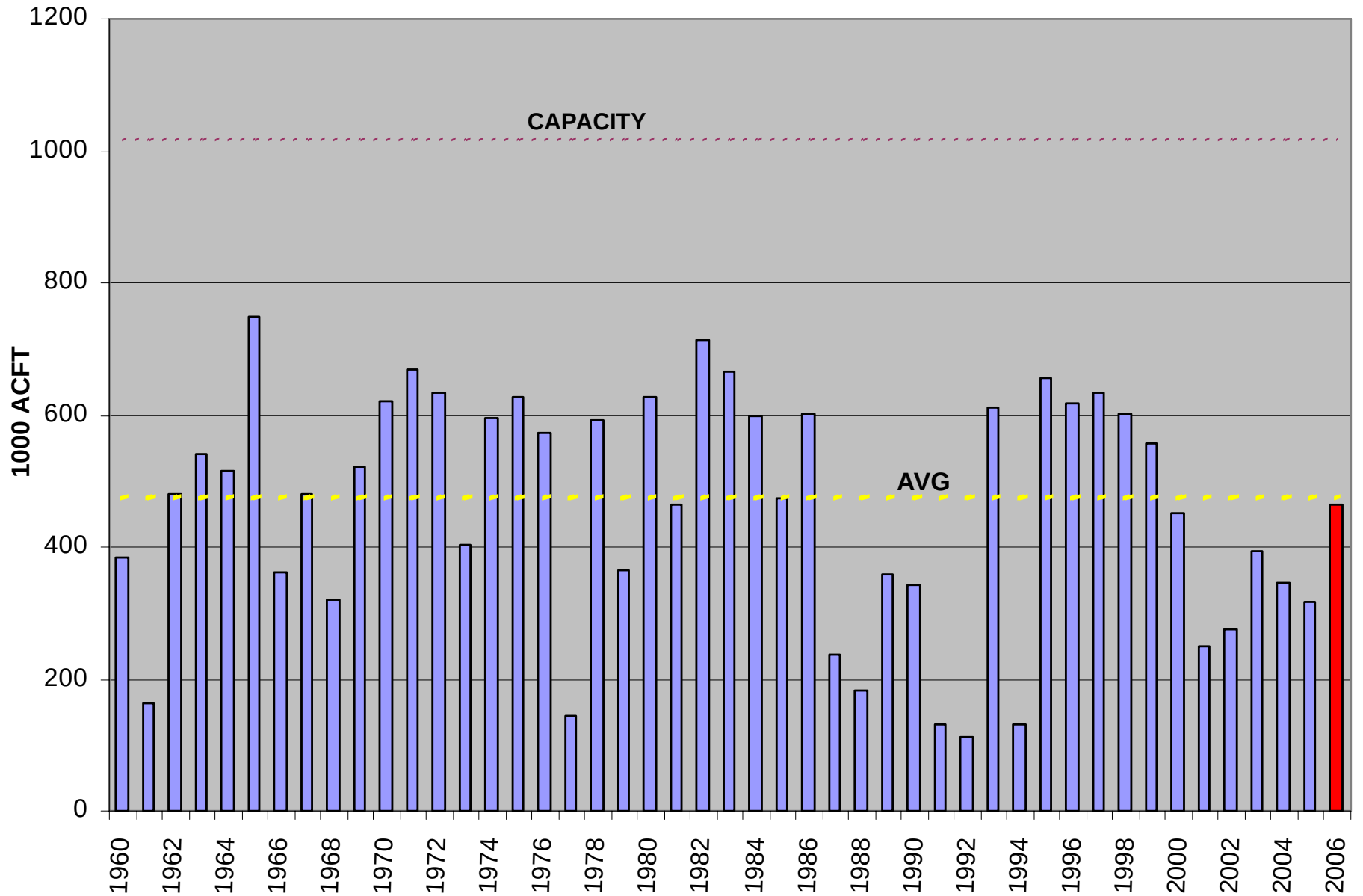
END OF SEPTEMBER STORAGE

Jackson+ Palisades+ Island Park + American Falls

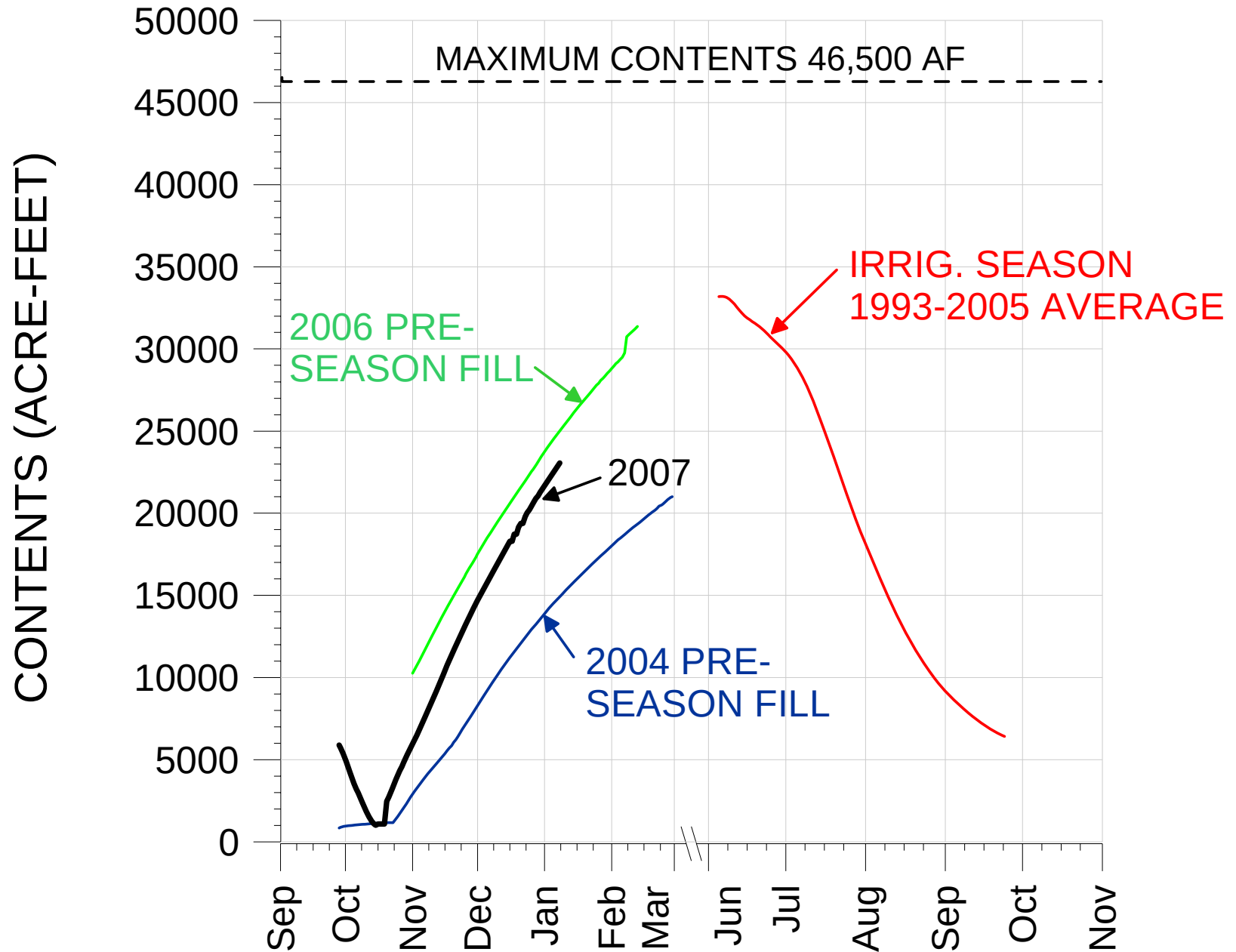


BOISE RIVER RESERVOIR SYSTEM

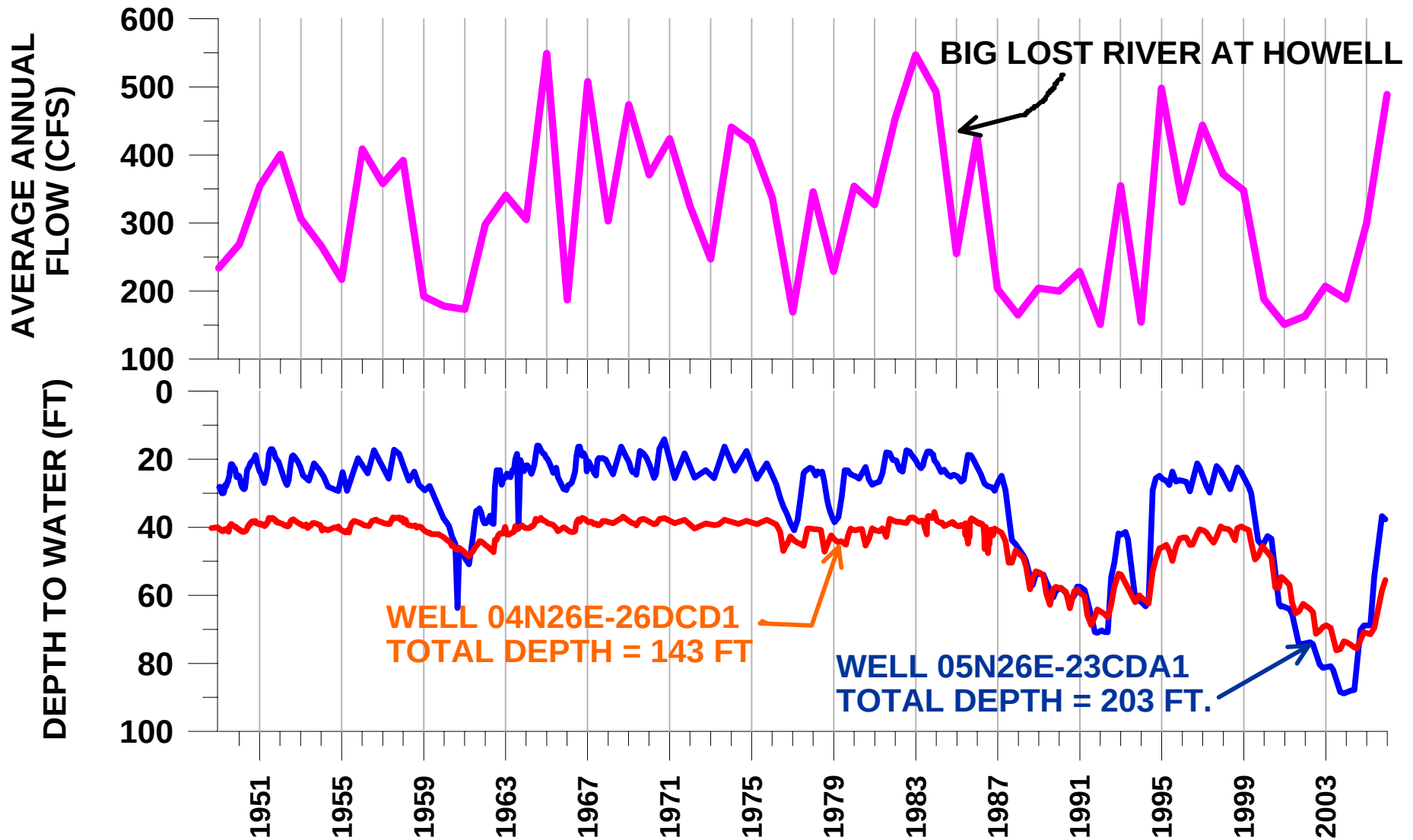
END OF SEPTEMBER STORAGE



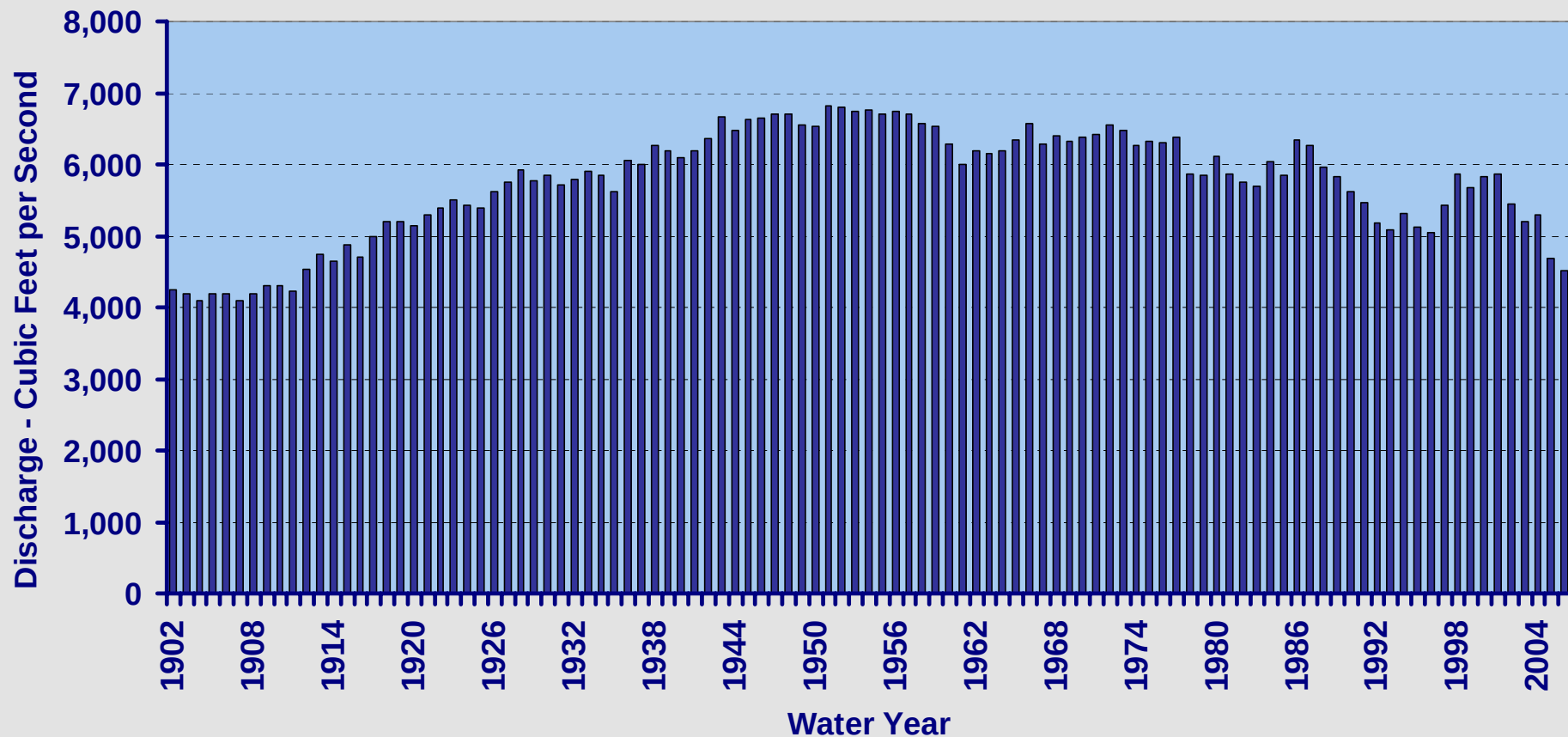
MACKAY RESERVOIR HISTORIC AND CURRENT CONTENTS



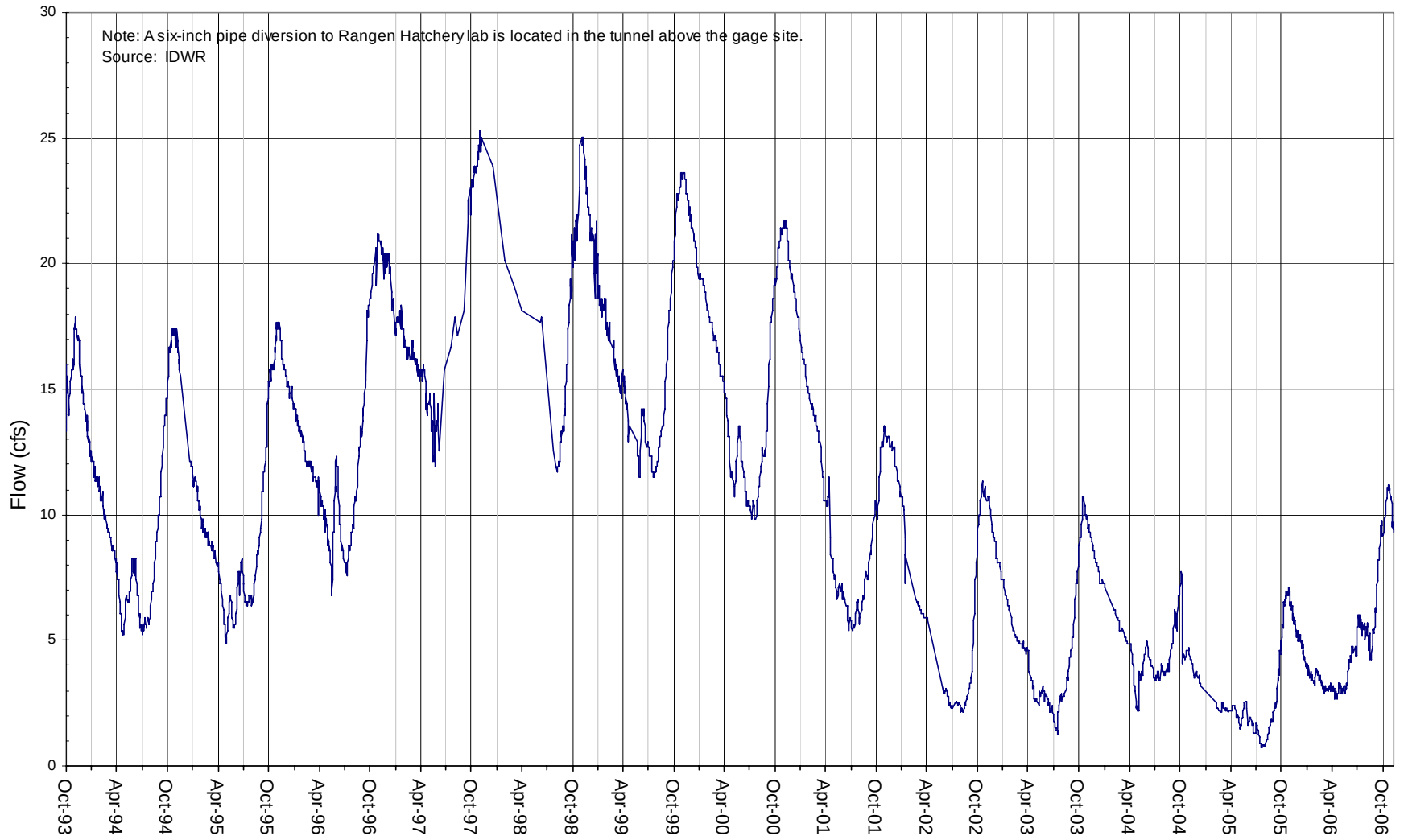
BIG LOST RIVER AT HOWELL COMPARISON WITH DEPTH TO WATER IN SELECTED WELLS



**AVERAGE ANNUAL SPRING DISCHARGE TO SNAKE RIVER BETWEEN
MILNER AND KING HILL
1902-2006**



Current Tunnel Average Daily Flow Rate
September 8, 1993 to November 9, 2006



RECLAMATION

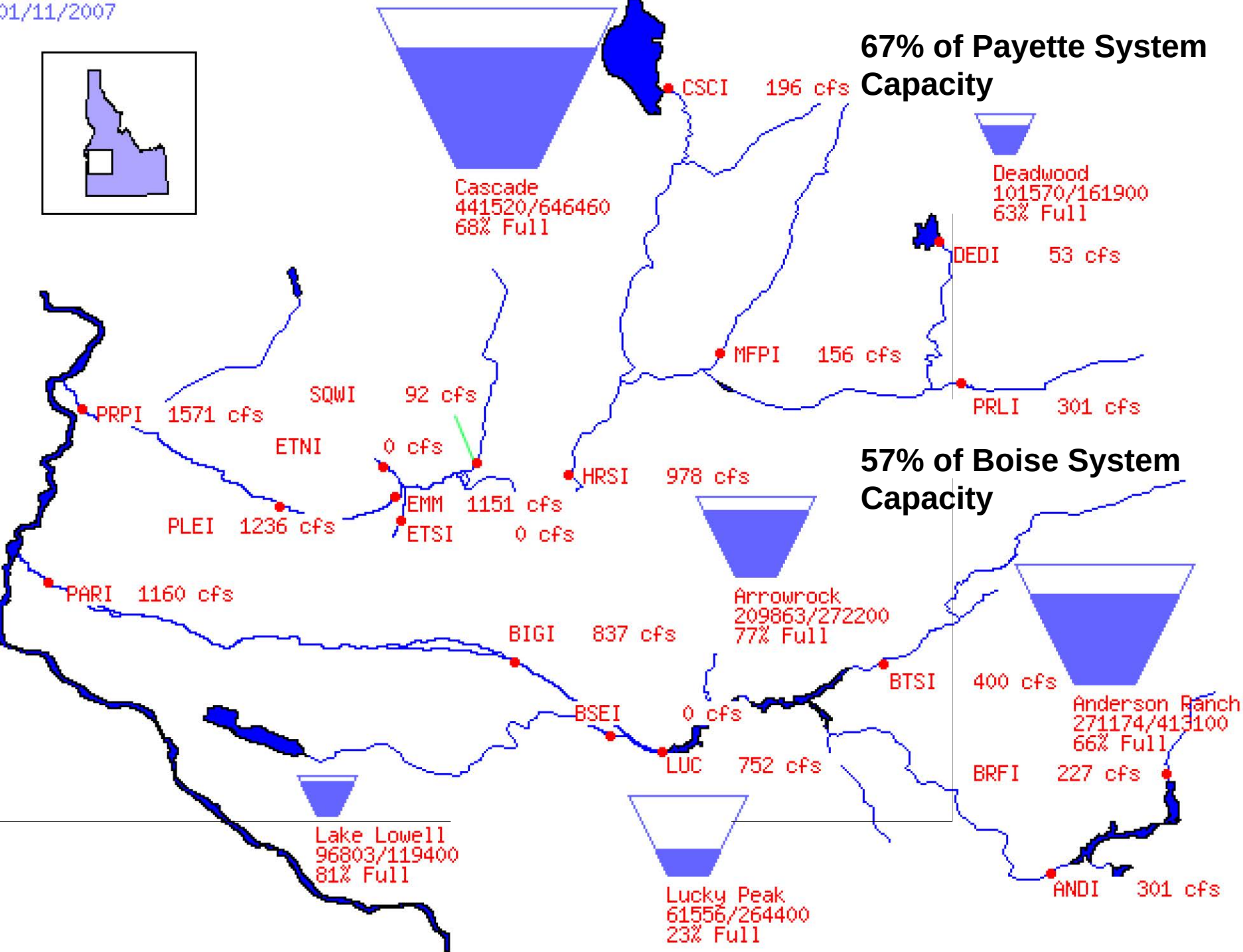
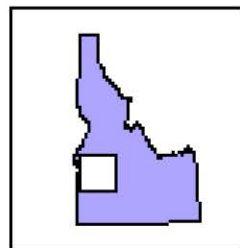
Managing Water in the West

Idaho Water Supply Committee Meeting

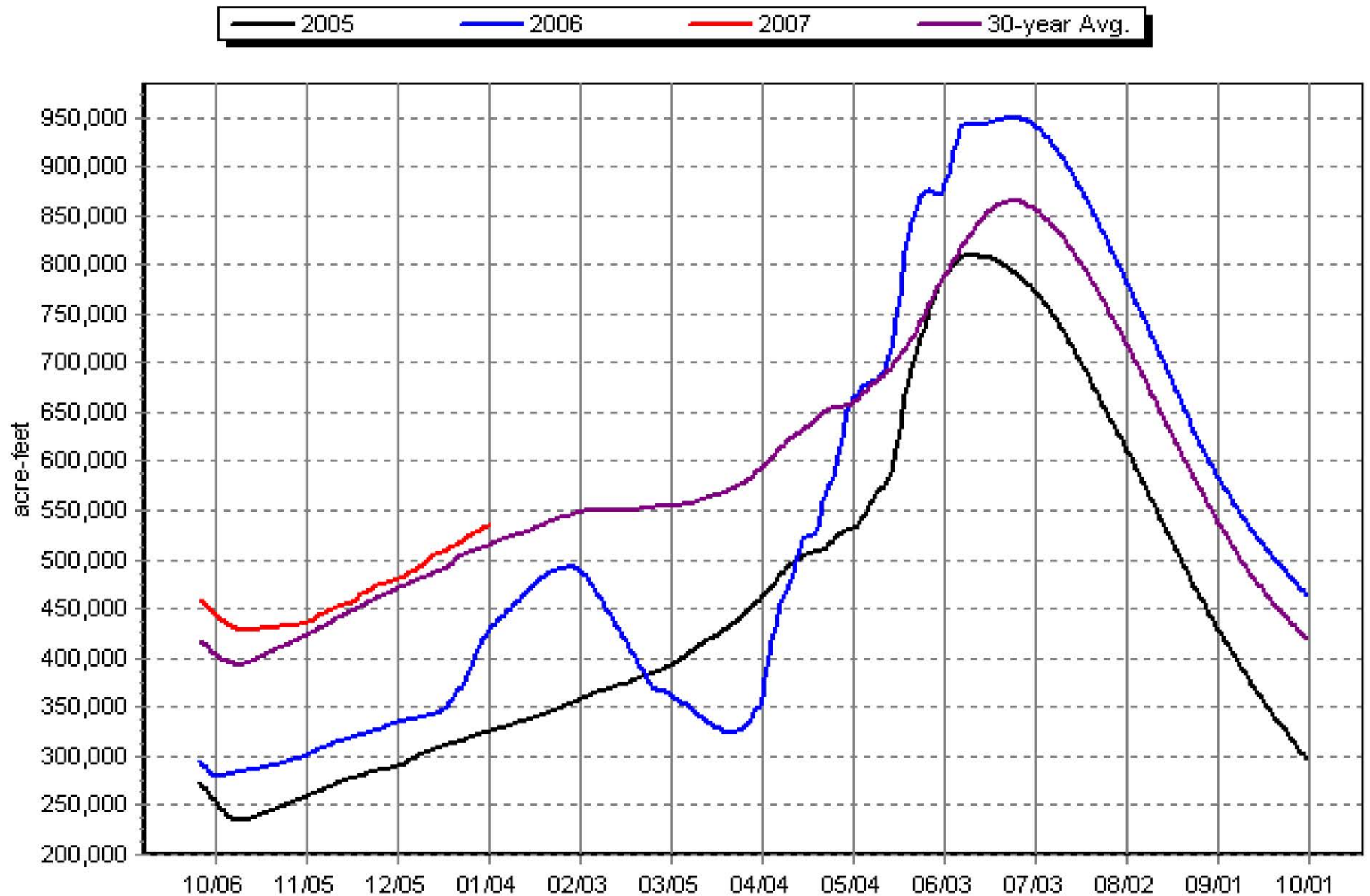
January 12, 2007



U.S. Department of the Interior
Bureau of Reclamation

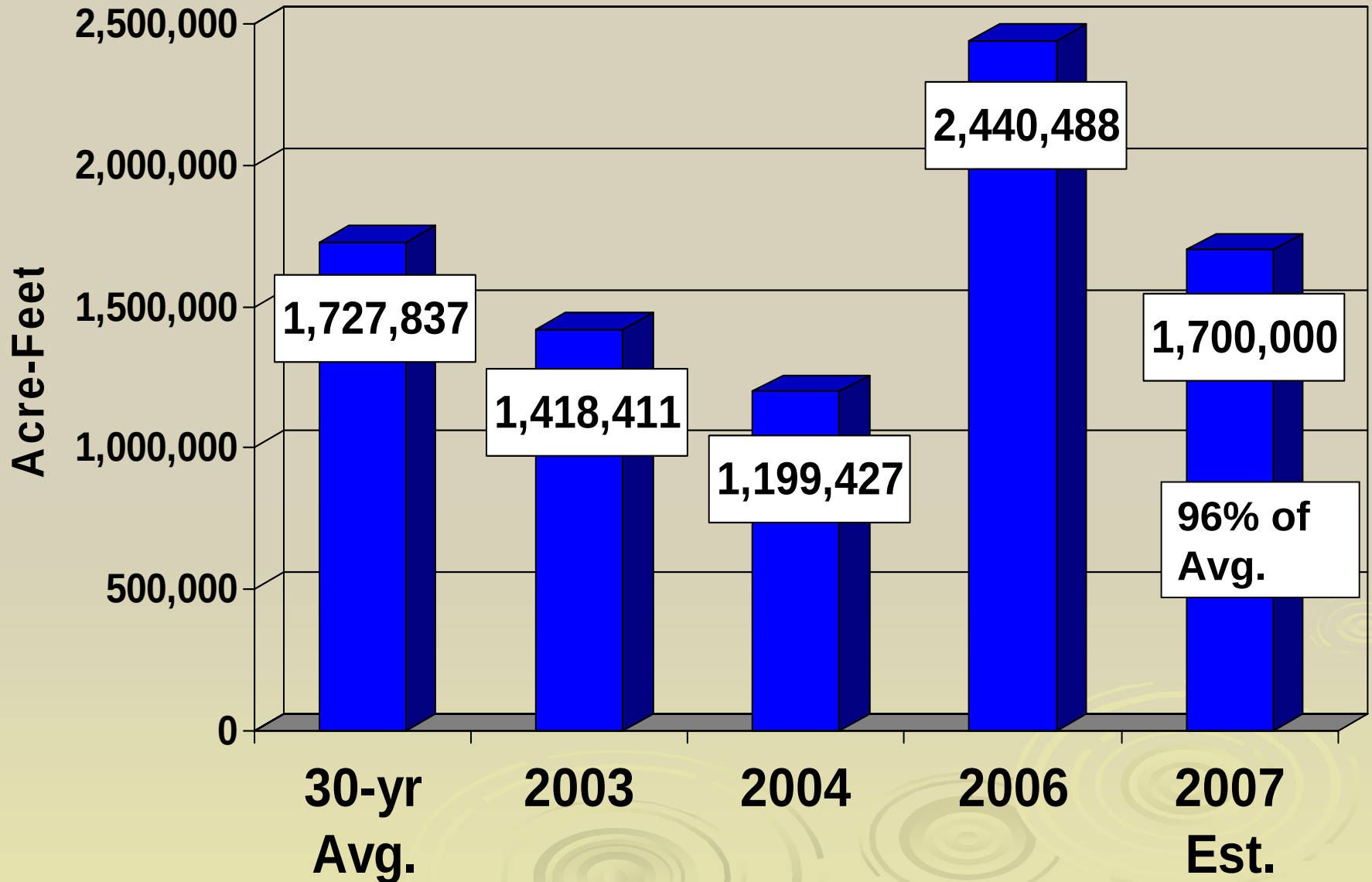


Boise River Reservoir Combined System Storage (Anderson Ranch, Arrowrock & Lucky Peak)



Boise Basin Runoff

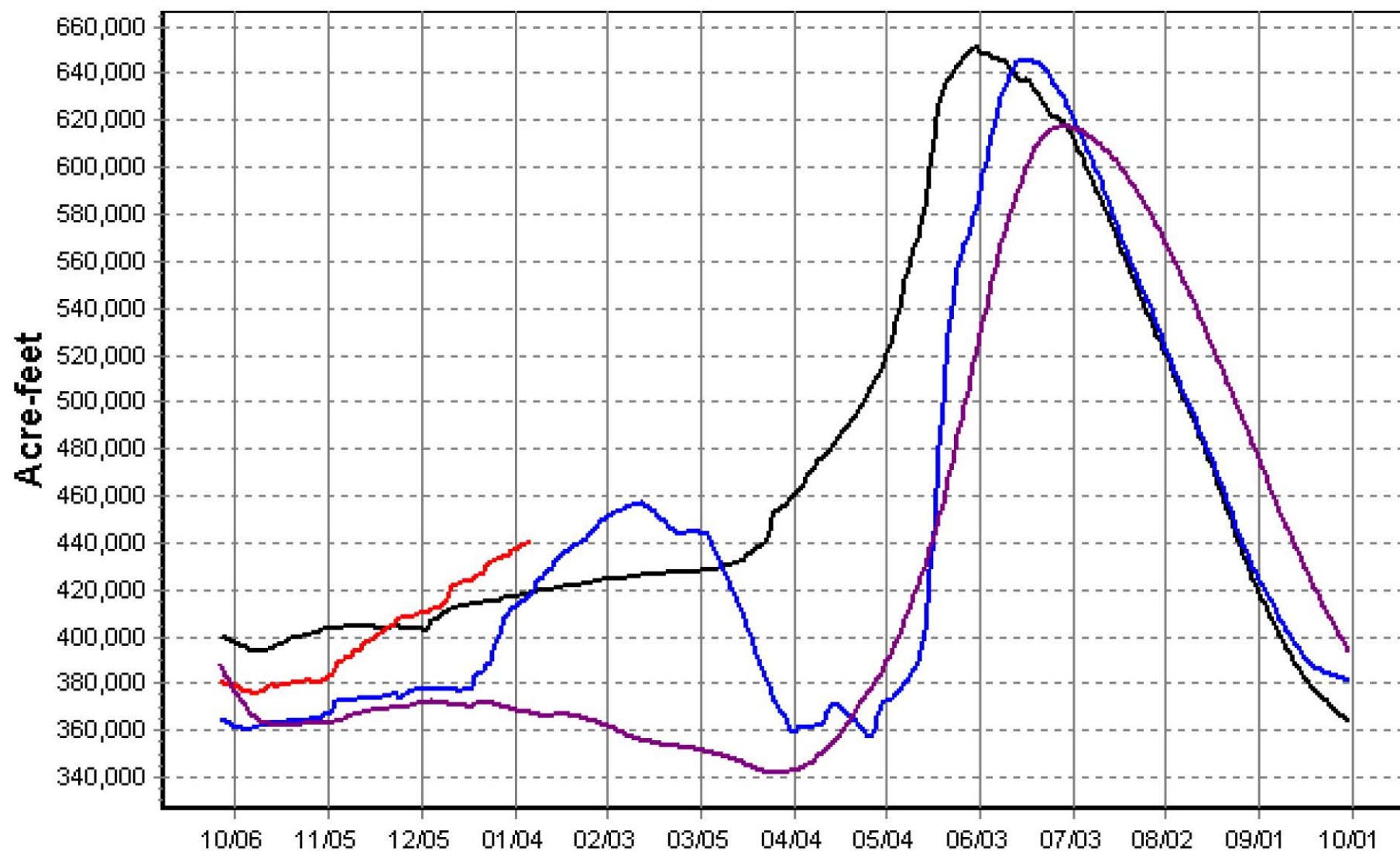
January 1 – July 30



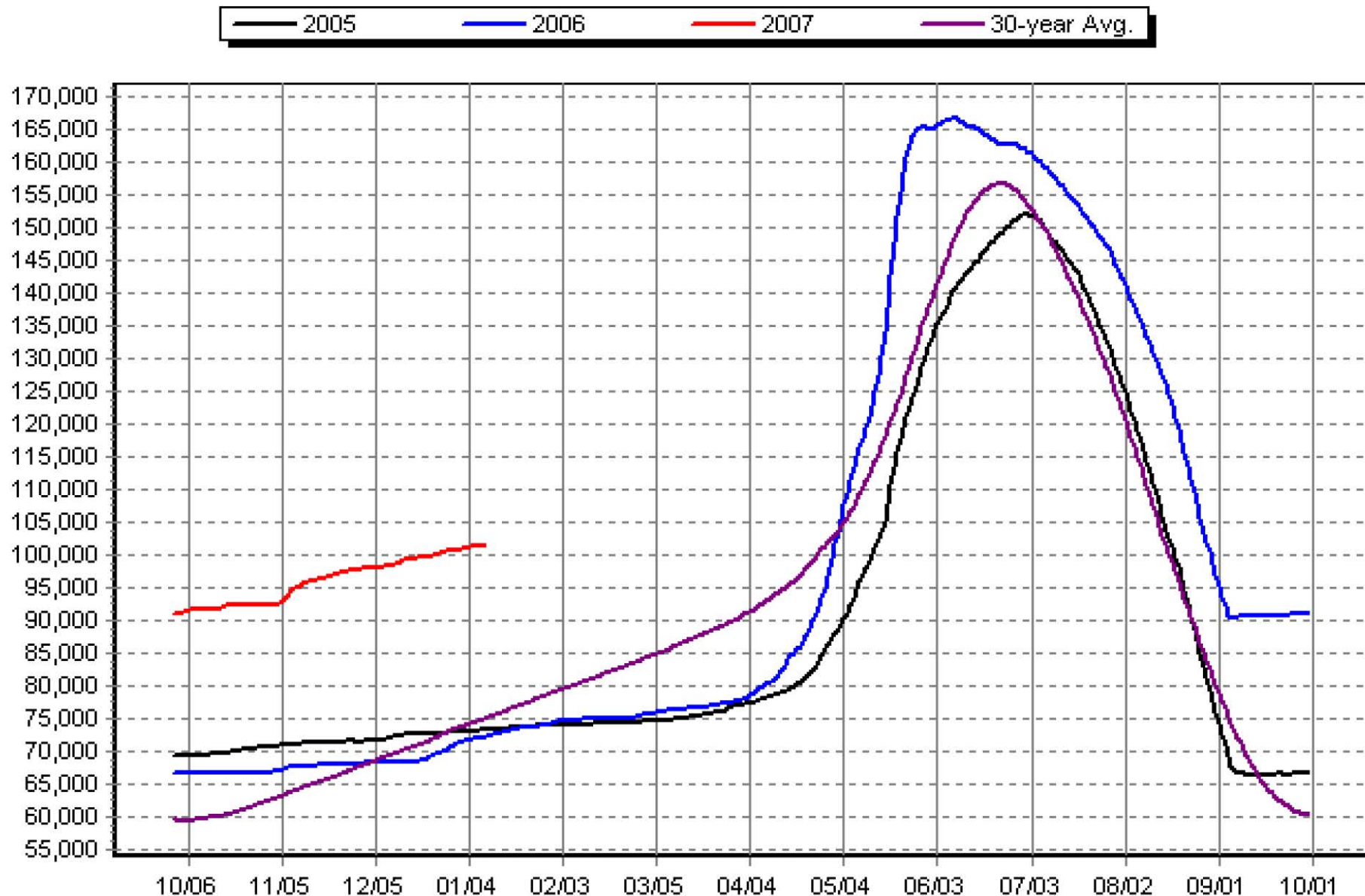
Cascade Reservoir Storage

Capacity = 646,460 af

— 2005 — 2006 — 2007 — 30-yr Avg.

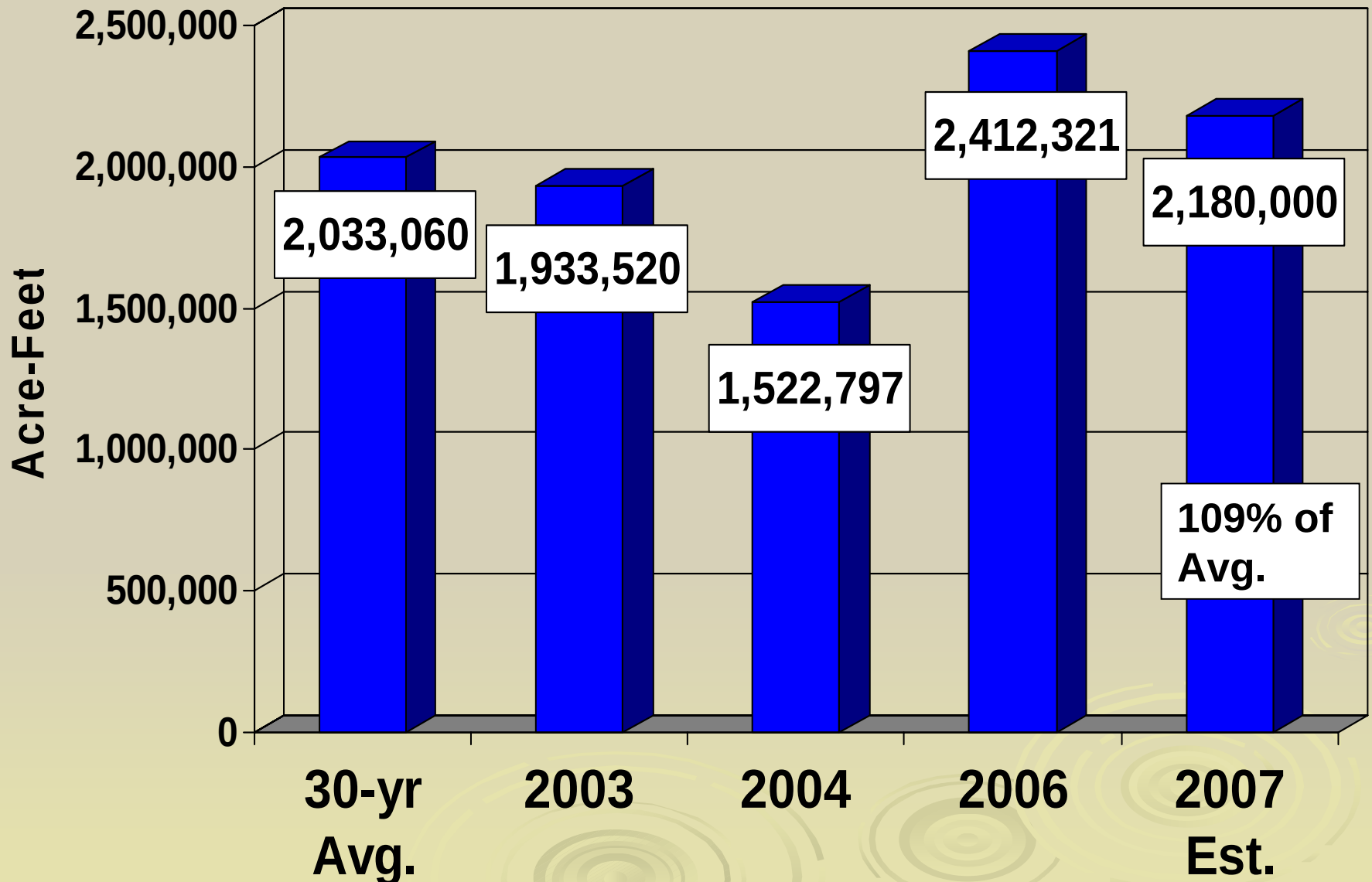


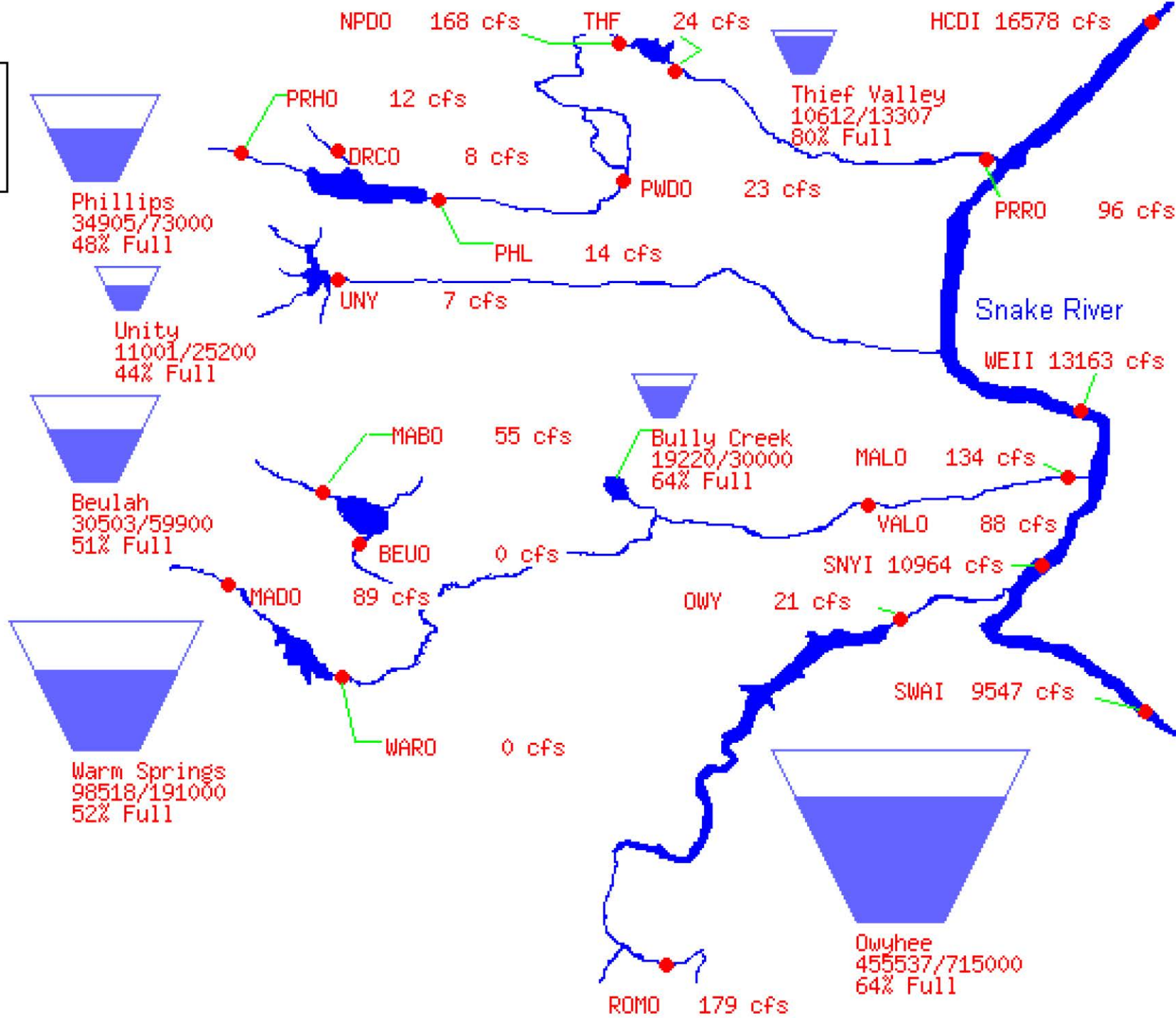
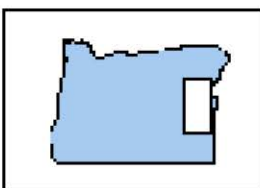
Deadwood Reservoir Storage Capacity = 161,900 af



Payette Basin Runoff

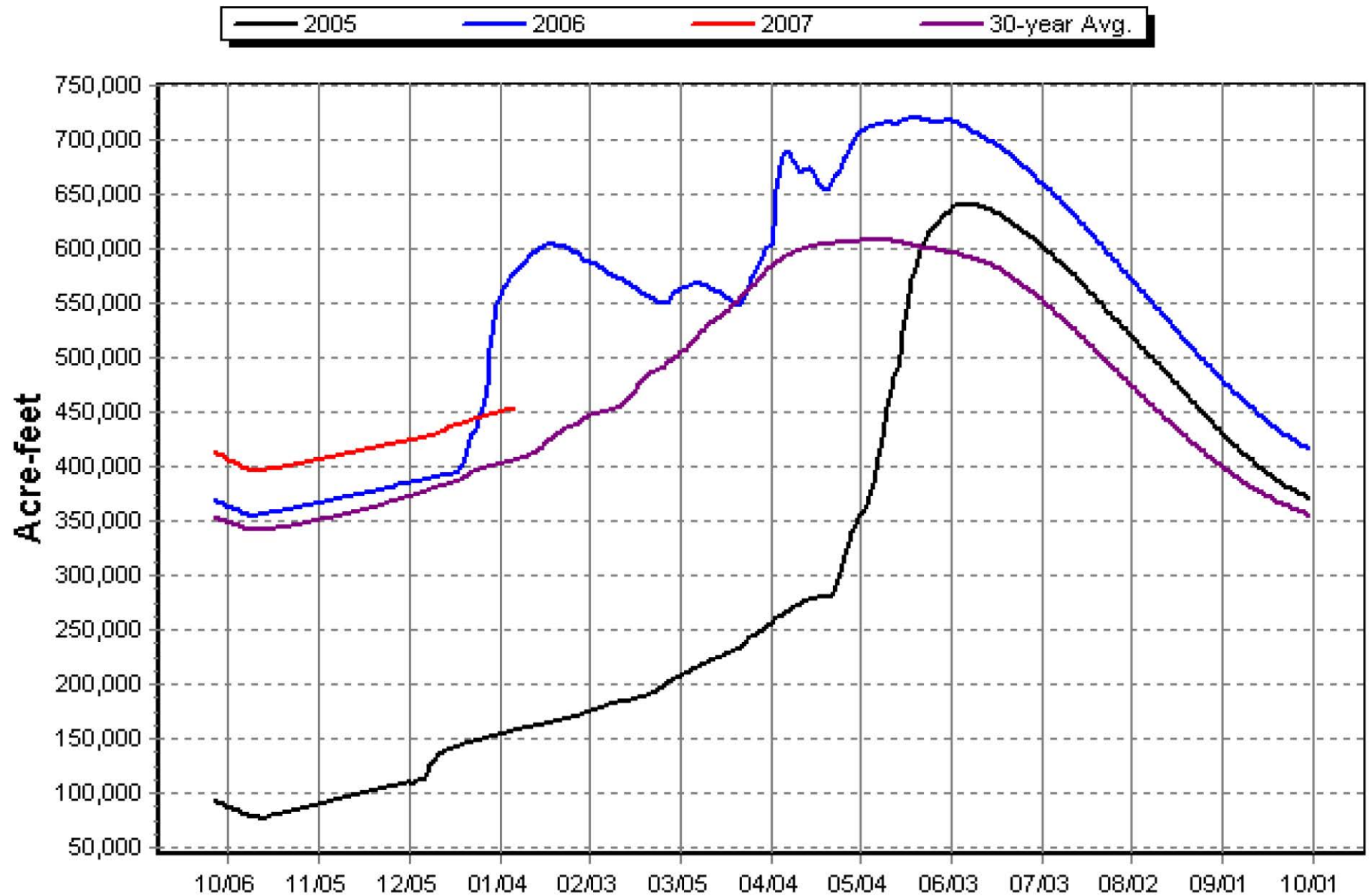
January –July @ Horseshoe Bend





Owyhee Reservoir Storage

Capacity = 715,000 af



Owyhee Basin Runoff

April-June

