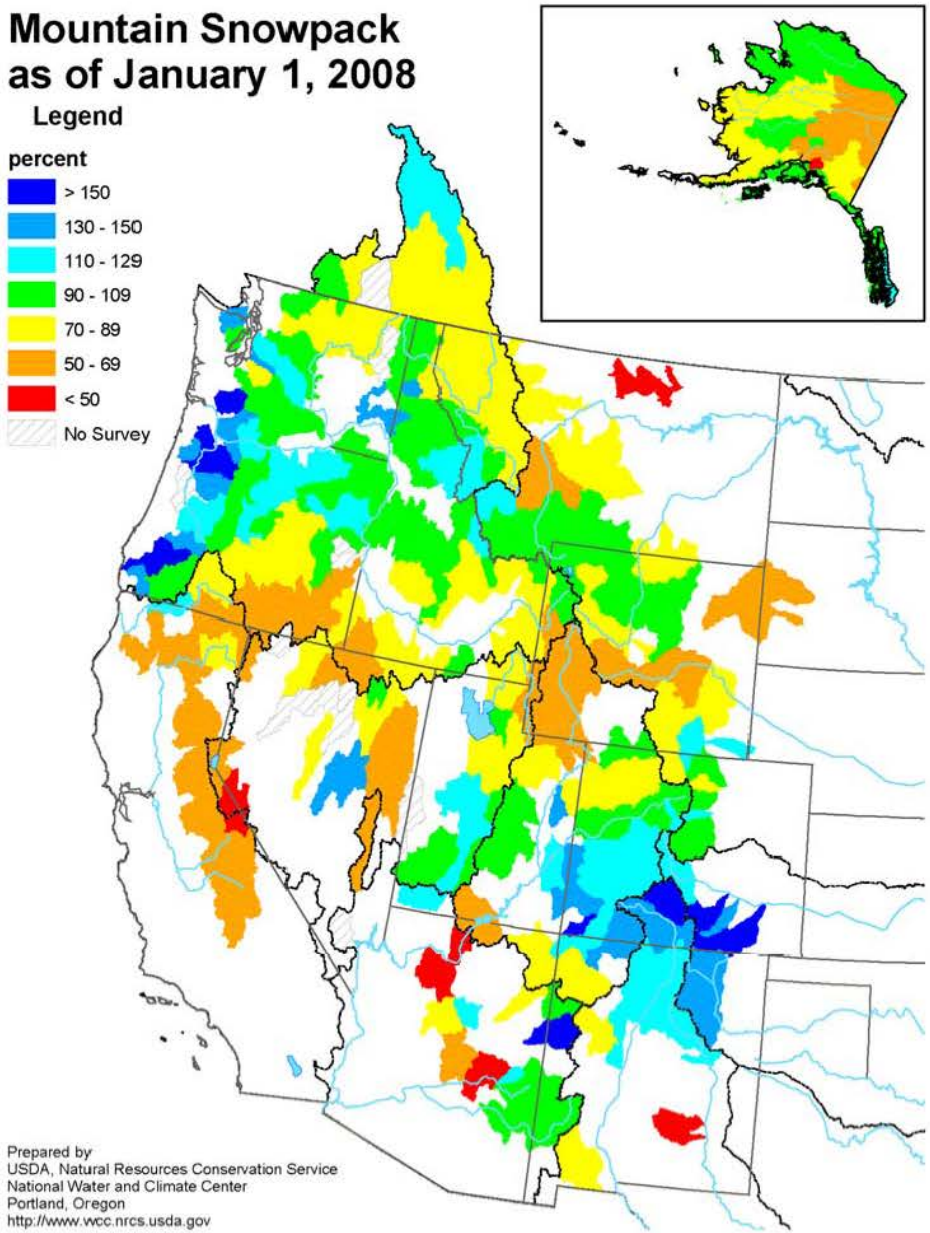
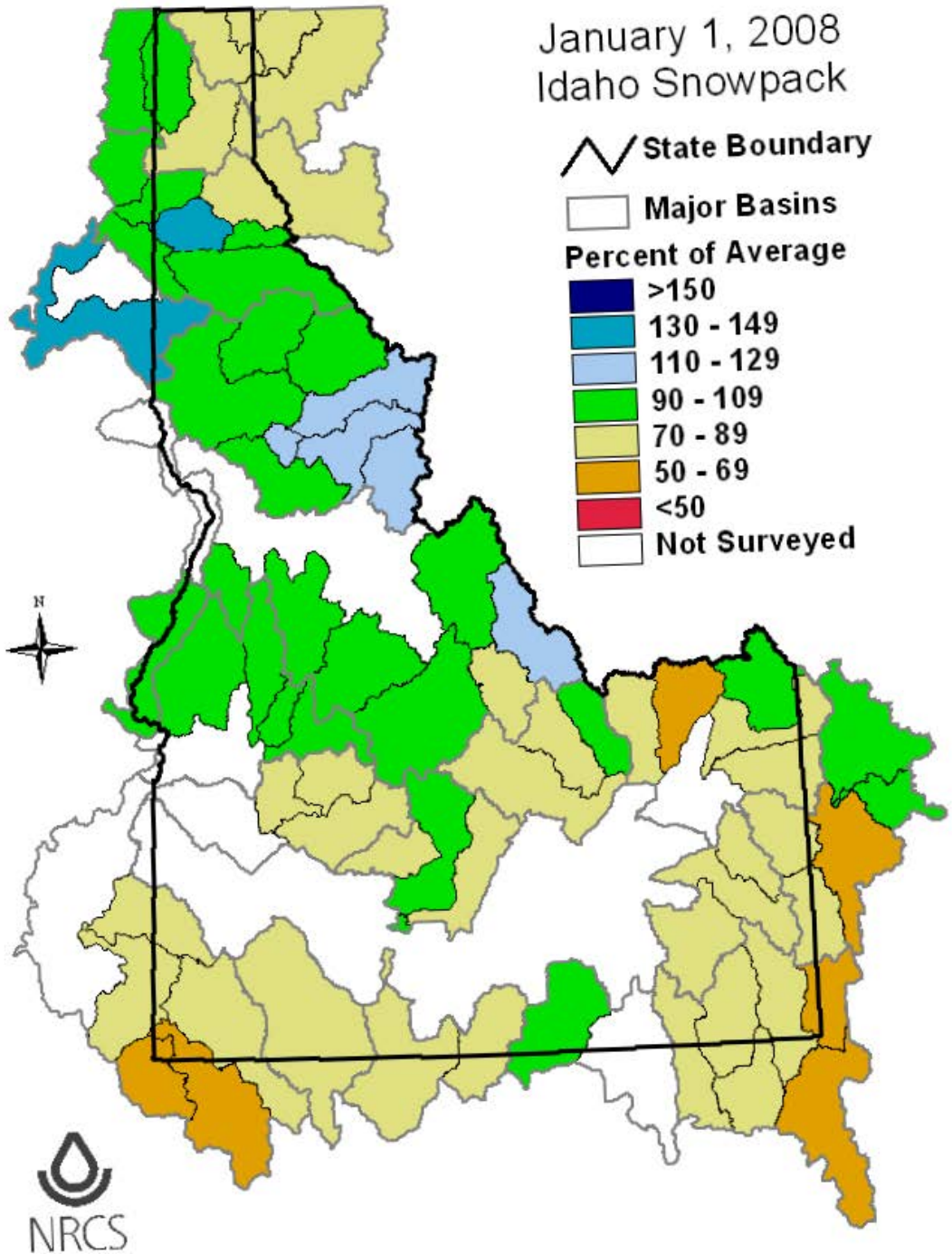
# IDWR Water Supply Meeting

January 15, 2008

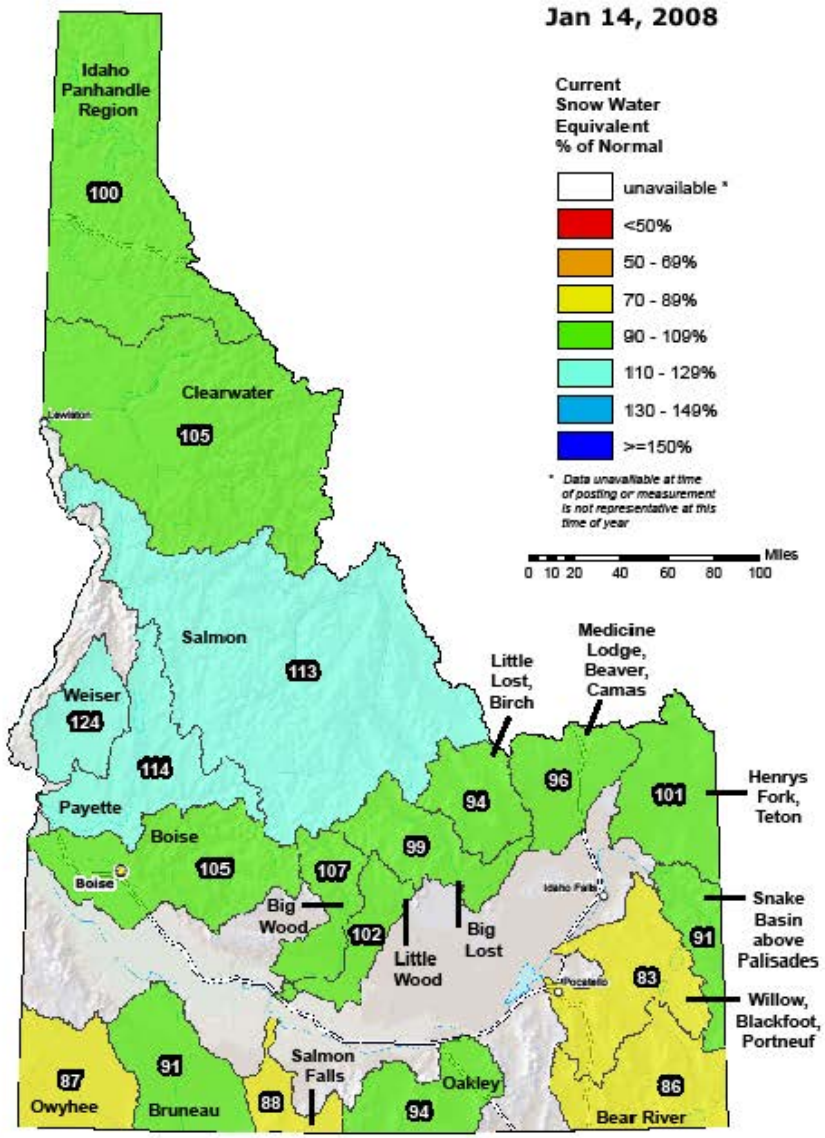
Phil Morrisey USDA NRCS
Snow Survey Boise, Idaho

# Mountain Snowpack as of January 1, 2008




January 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
N
NRCS

# Idaho Current SNOTEL Snow Water Equivalent % of Normal

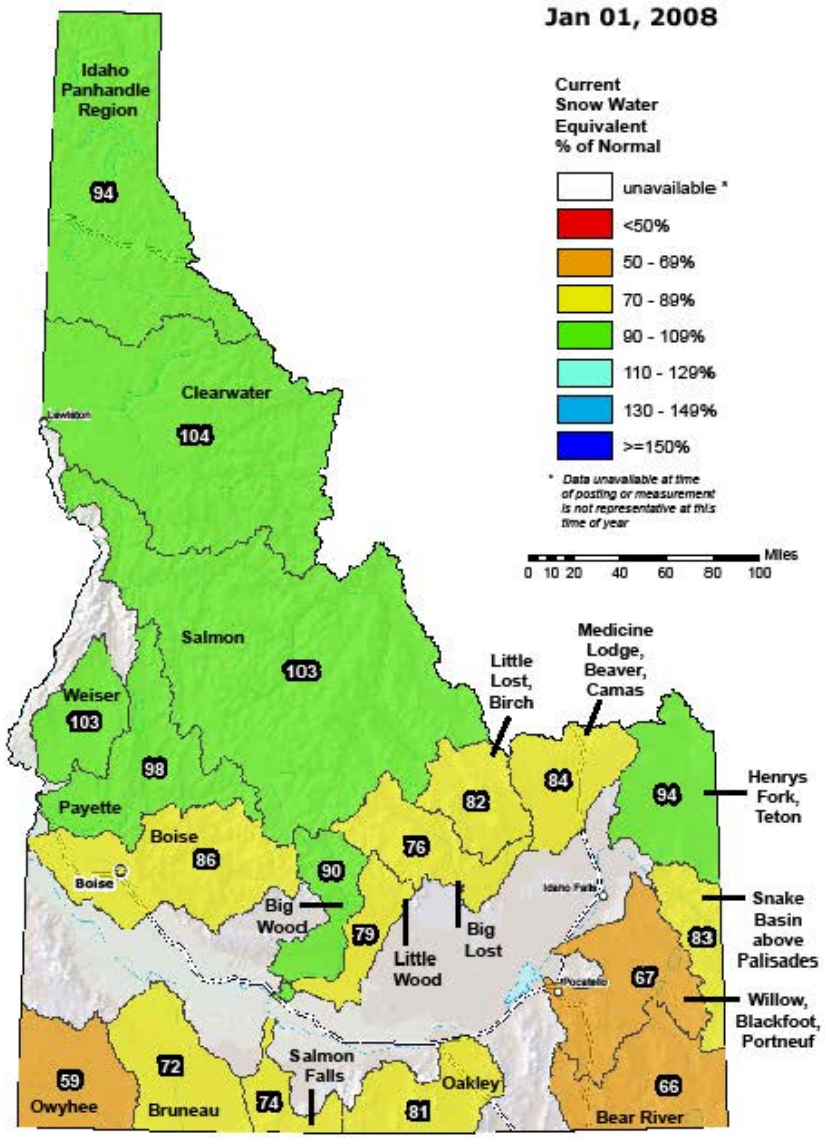



USDA NRCS

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

*Provisional Data Subject to Revision*

# Idaho Current SNOTEL Snow Water Equivalent % of Normal

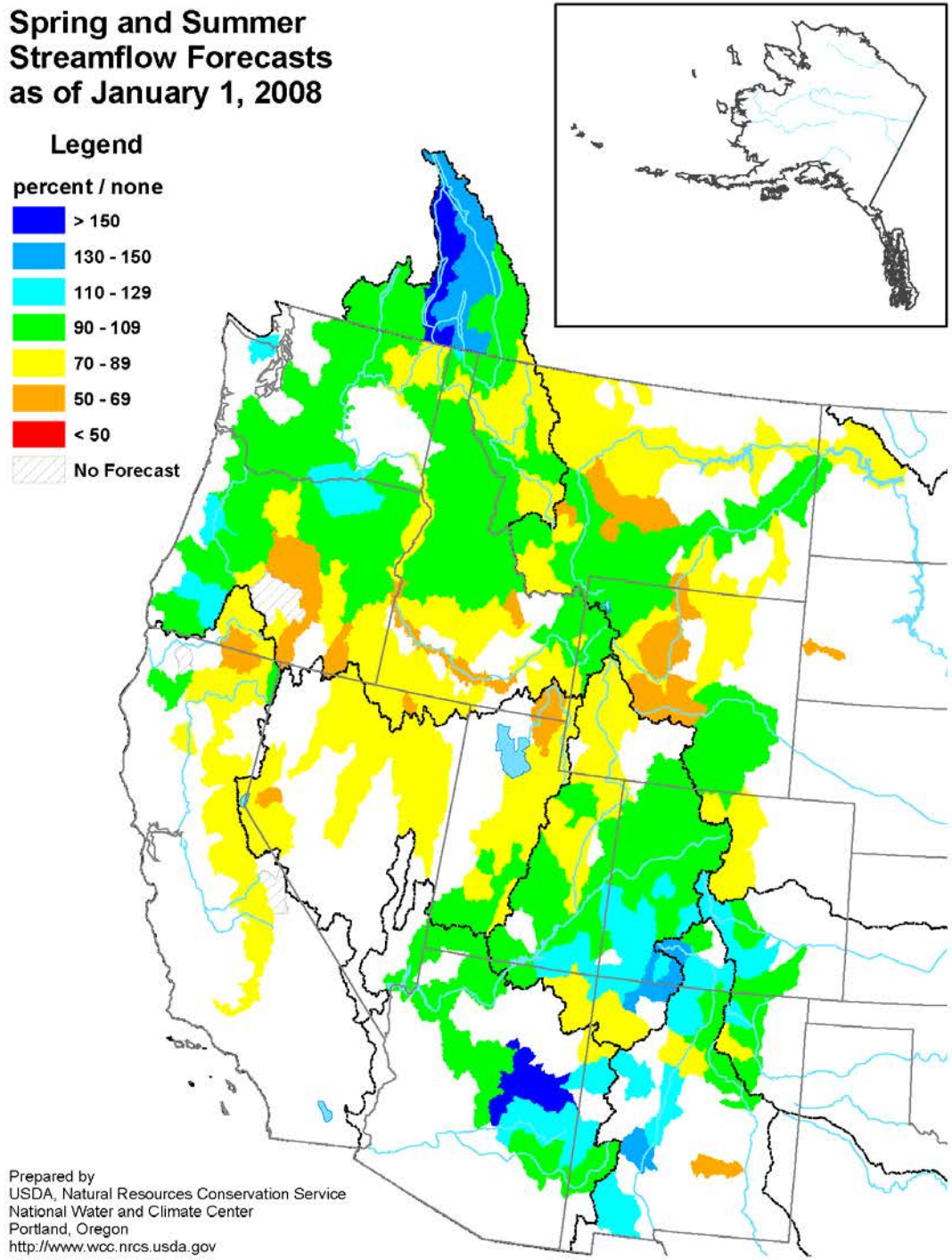



USDA NRCS

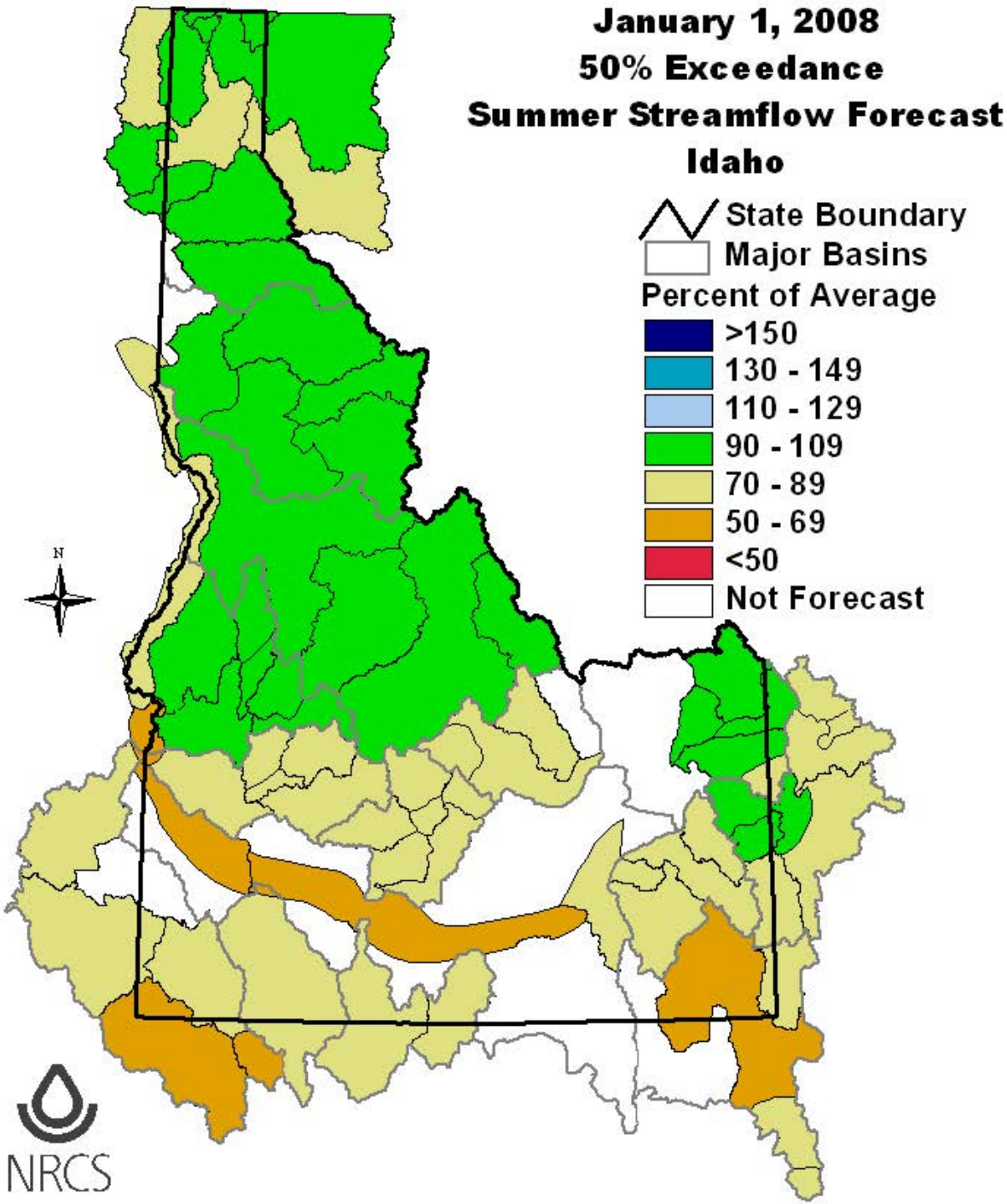
Prepared by the
USDA/NRCS National Water and Climate Center
Portland, Oregon
http://www.wcc.nrcs.usda.gov/gis/

*Provisional Data Subject to Revision*

# Spring and Summer Streamflow Forecasts as of January 1, 2008




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


January 1, 2008
50% Exceedance
Summer Streamflow Forecast
Idaho
State Boundary
Major Basins
Percent of Average
>150
130 - 149
110 - 129
90 - 109
70 - 89
50 - 69
<50
Not Forecast
N
NRCS

# IDAHO RESERVOIR STORAGE

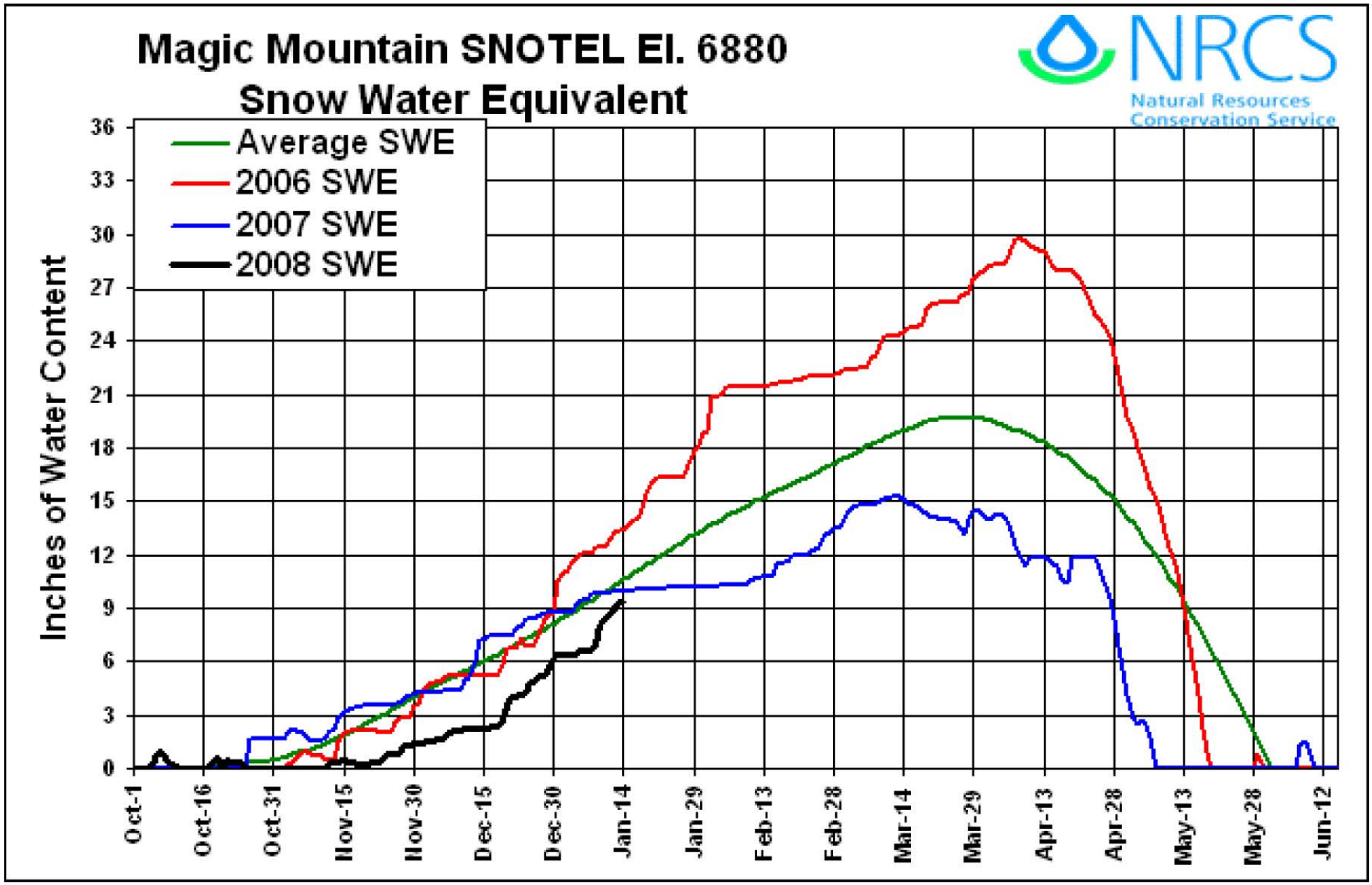
## Usable Contents

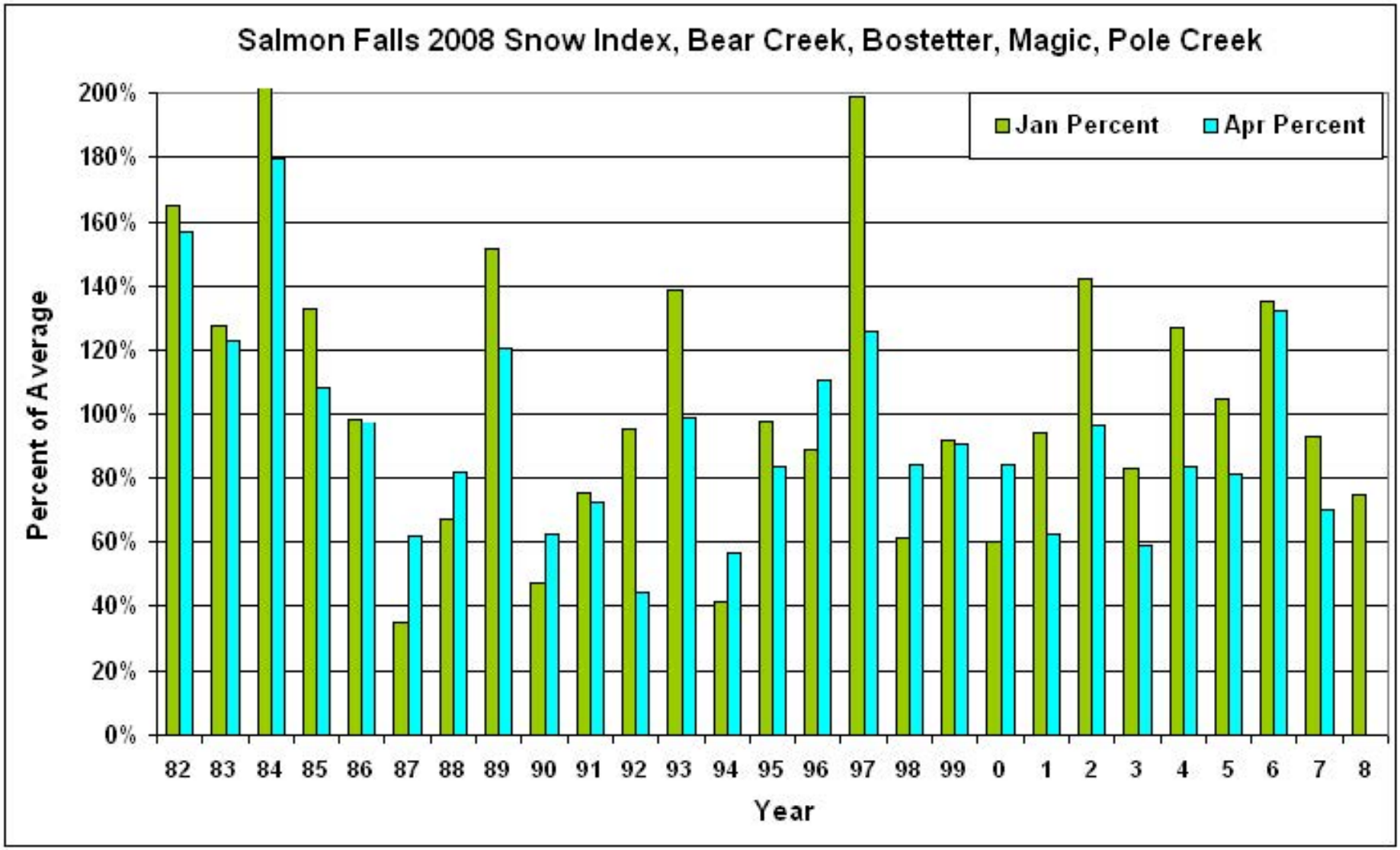
| Reservoir or Basin | Percent of Capacity December 31, 2007 | Percent of Average December 31, 2007 | Percent of Average December 31, 2006 |
|---|---|---|---|
| Magic | 9 | 21 | 138 |
| Blackfoot | 23 | 37 | 75 |
| Bear Lake | 24 | 38 | 58 |
| Owyhee | 24 | 44 | 113 |
| Jackson & Palisades (2) | 33 | 48 | 103 |
| Salmon Falls | 15 | 51 | 138 |
| Coeur d'Alene | 30 | 65 | 106 |
| Little Wood | 31 | 67 | 151 |
| American Falls | 42 | 72 | 108 |
| Boise (3) | 41 | 73 | 105 |
| Mackay | 39 | 73 | 92 |
| Henrys Fork (3) | 68 | 86 | 108 |
| Oakley | 30 | 89 | 150 |
| Payette (2) | 61 | 96 | 108 |
| Dworshak | 65 | 101 | 117 |

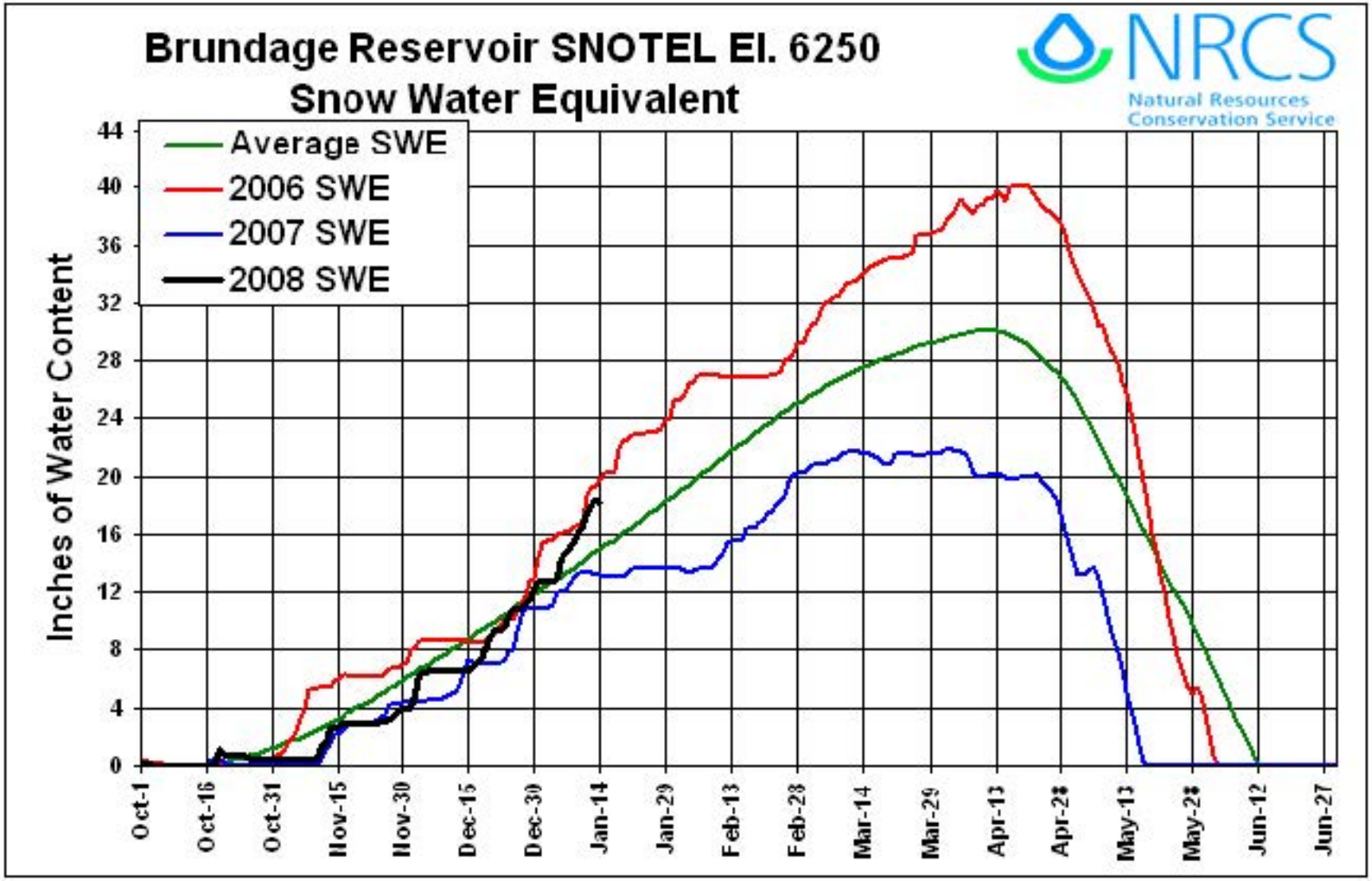
# IDAHO SURFACE WATER SUPPLY INDEX

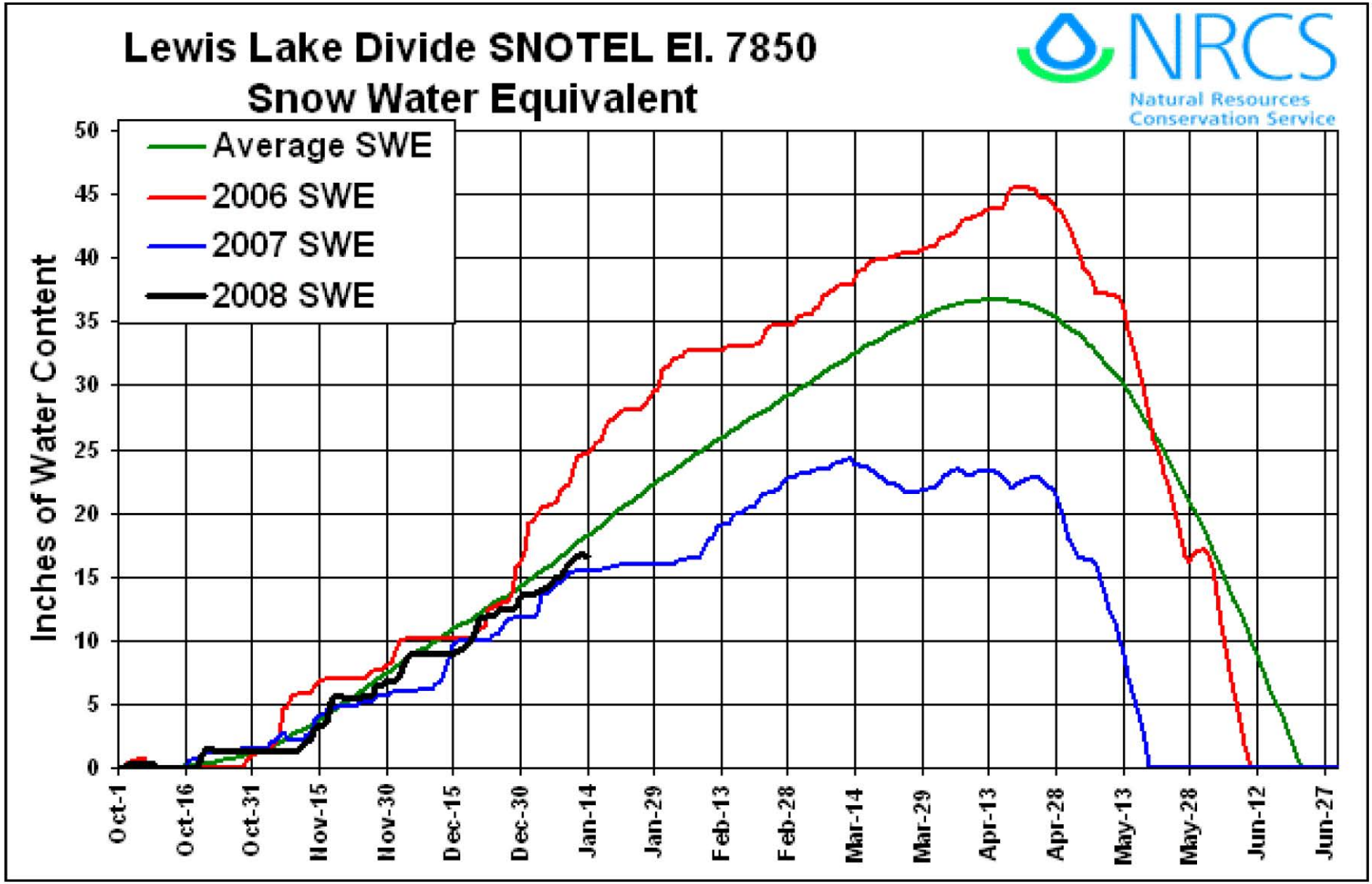
December 31, 2007

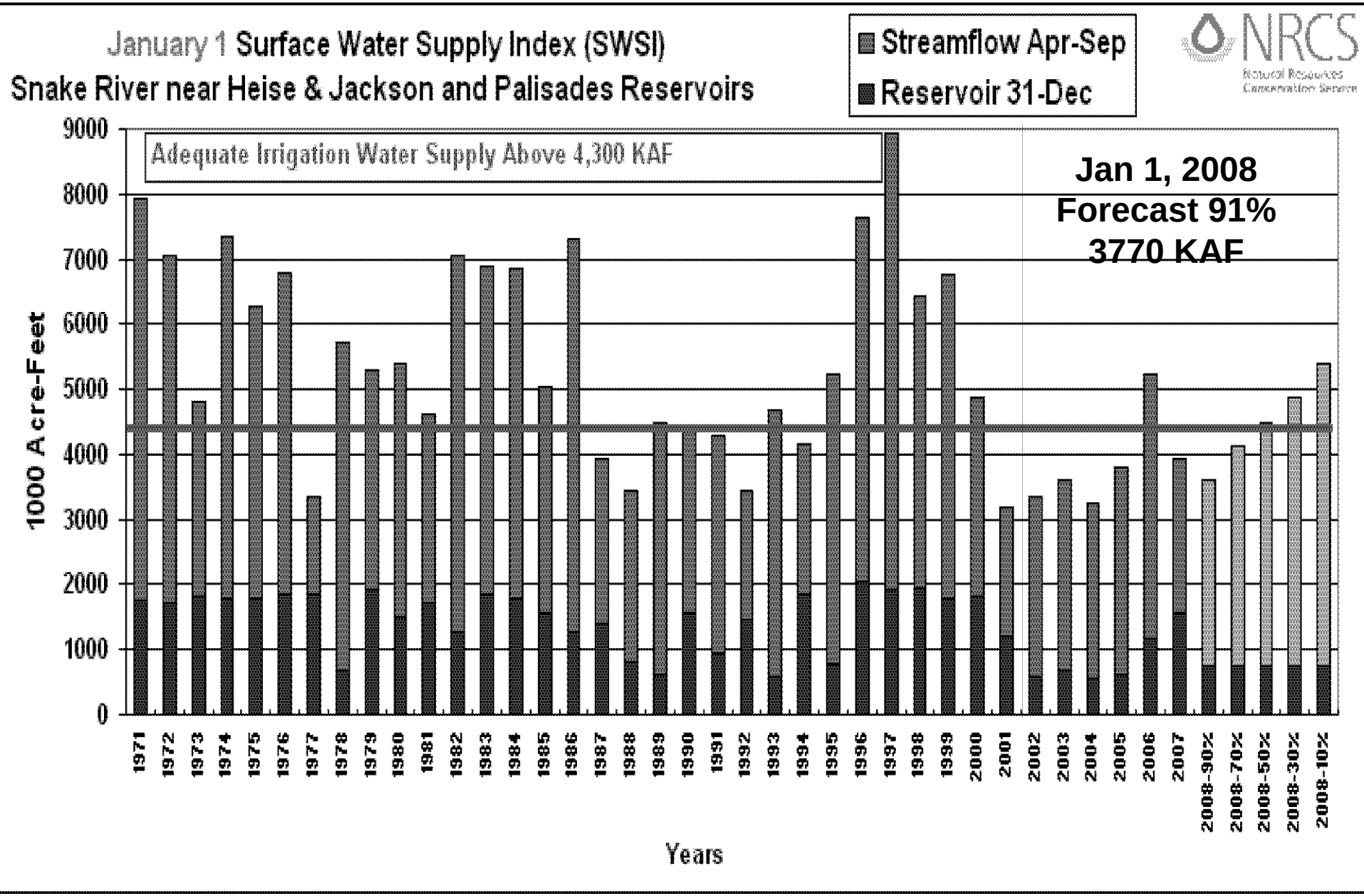
| BASIN or REGION | SWSI Value | Recent Year With Similar SWSI Value | Agricultural Water Supply Shortage May Occur When SWSI is Less Than |
|---|---|---|---|
| BEAR RIVER | -3.2 | 1992/1993 | -3.2 |
| SALMON FALLS | -1.9 | 2000 | -1.4 |
| LITTLE LOST | -1.6 | 1991 | 0.3 |
| SNAKE (HEISE) | -1.0 | 1989/1993 | -1.7 |
| OAKLEY | -1.0 | 2005 | -1.0 |
| BRUNEAU | -1.0 | 2004 | NA |
| PANHANDLE | -0.8 | 1983 | NA |
| BIG WOOD | -0.8 | 1989/2005 | -0.2 |
| BIG LOST | -0.5 | 2005 | -0.1 |
| BOISE | -0.5 | 2003 | -1.6 |
| LITTLE WOOD | -0.1 | 1985/2005 | -1.8 |
| HENRYS FORK | -0.1 | 1989 | -3.3 |
| PAYETTE | 0.2 | 2003 | NA |
| SALMON | 0.3 | 1998 | NA |
| WEISER | 0.3 | 2002 | NA |
| CLEARWATER | 0.8 | 1993/2006 | NA |


Magic Mountain SNOTEL El. 6880
Snow Water Equivalent
NRCS
Natural Resources
Conservation Service
Average SWE
2006 SWE
2007 SWE
2008 SWE
Inches of Water Content
36
33
30
27
24
21
18
15
12
9
6
3
0
Oct-1
Oct-16
Oct-31
Nov-15
Nov-30
Dec-15
Dec-30
Jan-14
Jan-29
Feb-13
Feb-28
Mar-14
Mar-29
Apr-13
Apr-28
May-13
May-28
Jun-12


Salmon Falls 2008 Snow Index, Bear Creek, Bostetter, Magic, Pole Creek
Jan Percent
Apr Percent
Percent of Average
200%
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 0 1 2 3 4 5 6 7 8
Year

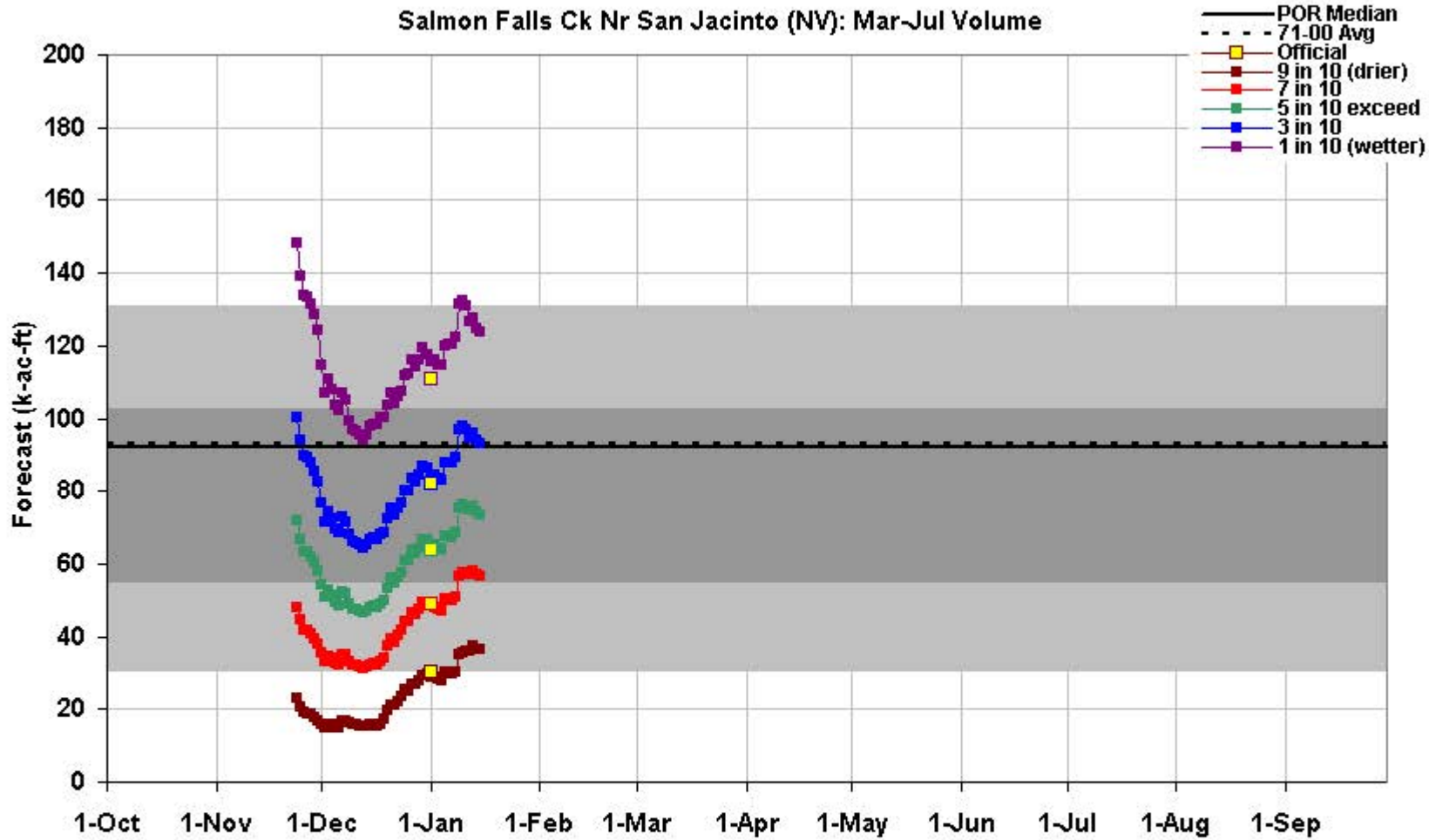

Brundage Reservoir SNOTEL El. 6250
Snow Water Equivalent
NRCS
Natural Resources
Conservation Service
Average SWE
2006 SWE
2007 SWE
2008 SWE
Inches of Water Content
44
40
36
32
28
24
20
16
12
8
4
0
Oct-1
Oct-16
Oct-31
Nov-15
Nov-30
Dec-15
Dec-30
Jan-14
Jan-29
Feb-13
Feb-28
Mar-14
Mar-29
Apr-13
Apr-28
May-13
May-28
Jun-12
Jun-27


Lewis Lake Divide SNOTEL El. 7850
Snow Water Equivalent
NRCS
Natural Resources
Conservation Service
Average SWE
2006 SWE
2007 SWE
2008 SWE
Inches of Water Content
0
5
10
15
20
25
30
35
40
45
50
Oct-1
Oct-16
Oct-31
Nov-15
Nov-30
Dec-15
Dec-30
Jan-14
Jan-29
Feb-13
Feb-28
Mar-14
Mar-29
Apr-13
Apr-28
May-13
May-28
Jun-12
Jun-27


January 1 Surface Water Supply Index (SWSI)
Snake River near Heise & Jackson and Palisades Reservoirs
Streamflow Apr-Sep
Reservoir 31-Dec
NRCS
Natural Resources Conservation Service
Adequate Irrigation Water Supply Above 4,300 KAF
Jan 1, 2008
Forecast 91%
3770 KAF
1000 Acre-Feet
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
1971
1972
1973
1974
1975
1976
1977
1978
1979
1980
1981
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008-90%
2008-70%
2008-50%
2008-30%
2008-10%
Years

## SNOTEL January 2008 Precipitation as of Jan. 15

| Basin | Percent of January Average Total Precipitation |
|---|---|
| IDAHO PANHANDLE REGION | 55 |
| CLEARWATER BASIN | 50 |
| SALMON BASIN | 67 |
| WEISER BASIN | 89 |
| PAYETTE BASIN | 76 |
| BOISE BASIN | 73 |
| BIG WOOD BASIN | 77 |
| LITTLE WOOD BASIN | 88 |
| BIG LOST BASIN | 88 |
| LITTLE LOST, BIRCH BASINS | 65 |
| MEDICINE LODGE, BEAVER, CAMAS BASINS | 66 |
| HENRYS FORK, TETON BASINS | 58 |
| SNAKE BASIN ABOVE PALISADES | 54 |
| WILLOW, BLACKFOOT, PORTNEUF BASINS | 69 |
| OAKLEY BASIN | 69 |
| SALMON FALLS BASIN | 63 |
| BRUNEAU BASIN | 68 |
| OWYHEE BASIN | 70 |
| BEAR RIVER BASIN | 75 |




Created 7:03 Jan 15 2008

This is an automated product based solely on SNOTEL data, provisional data are subject to change. This product is a statistically based guidance forecast combining indices of snowpack and precipitation. **Yellow squares** are the official outlooks. **Gray background** is the historical period of record variability. This product does not consider climate information such as El Nino or short range weather forecasts, or a variety of other factors considered in the official forecasts. This product is not meant to replace or supercede the official forecasts produced in coordination with the National Weather Service.

Science Contact: Tom.Pagano@por.usda.gov 503 414 3010 www.wcc.nrcs.usda.gov/wsf/daily_forecasts.html

# Idaho Water Supply Outlook

## January 14th, 2008

Jay Breidenbach / NOAA National Weather Service

Drought

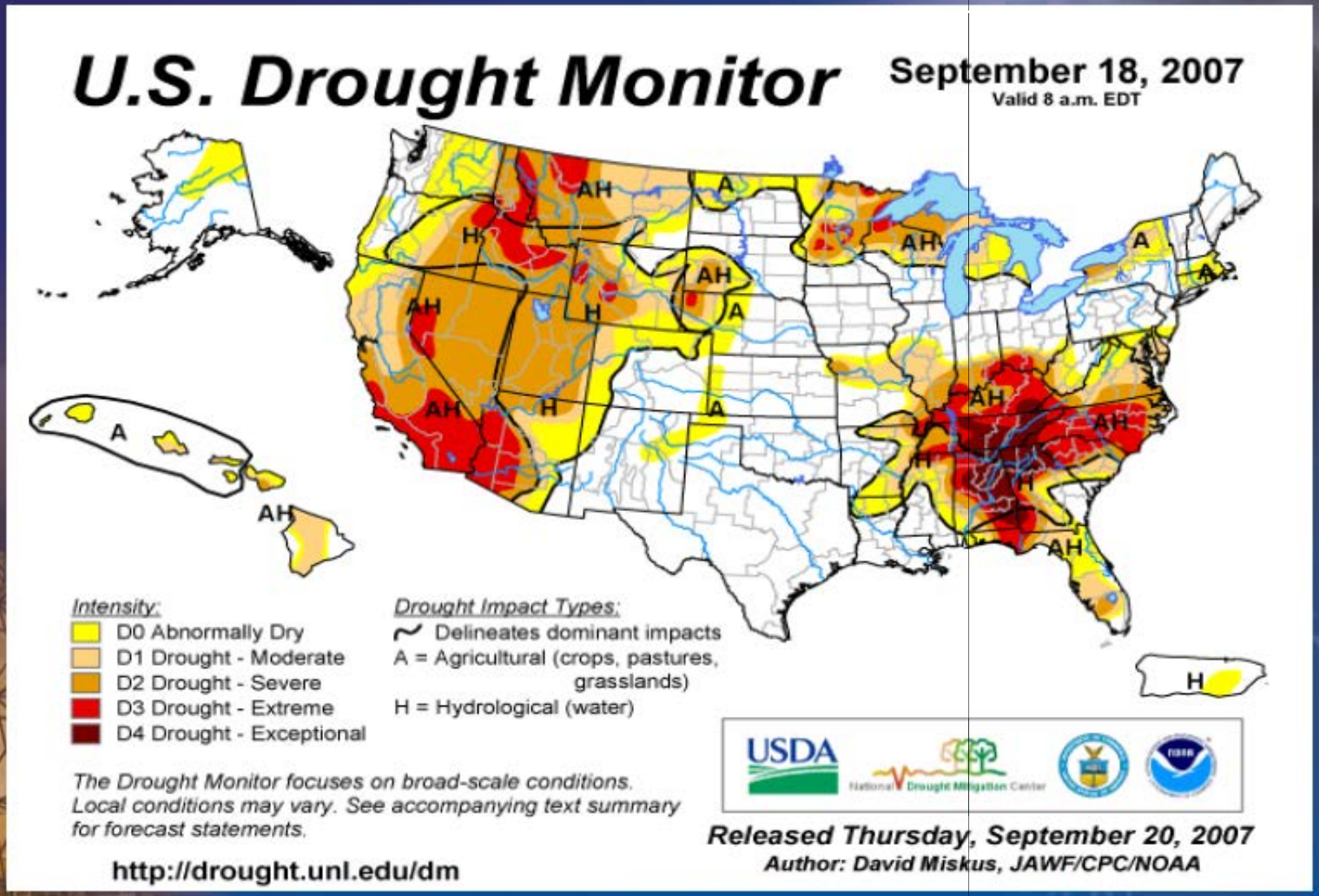
La-Nina

Three Month Climate Outlook

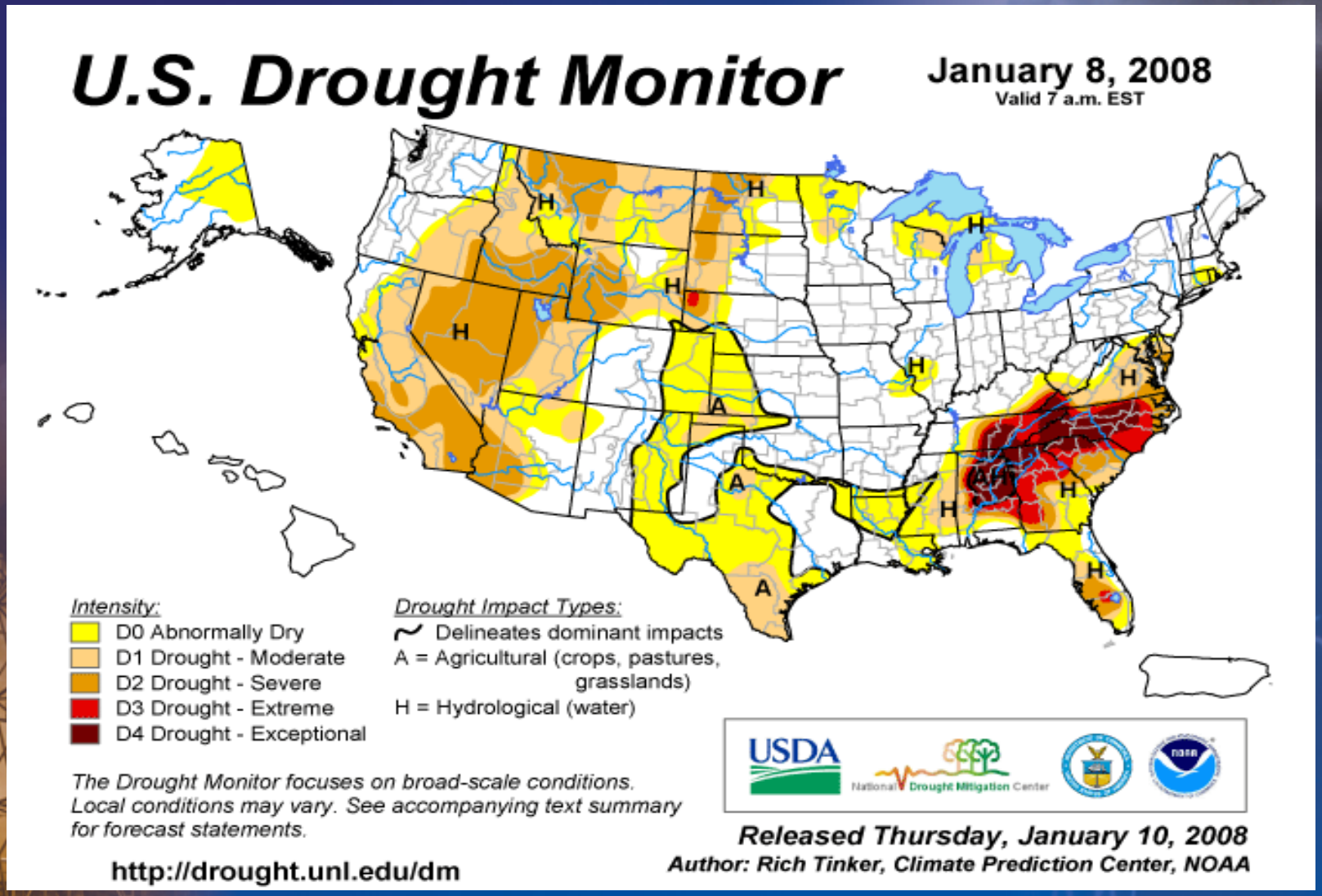
Water Supply Outlook

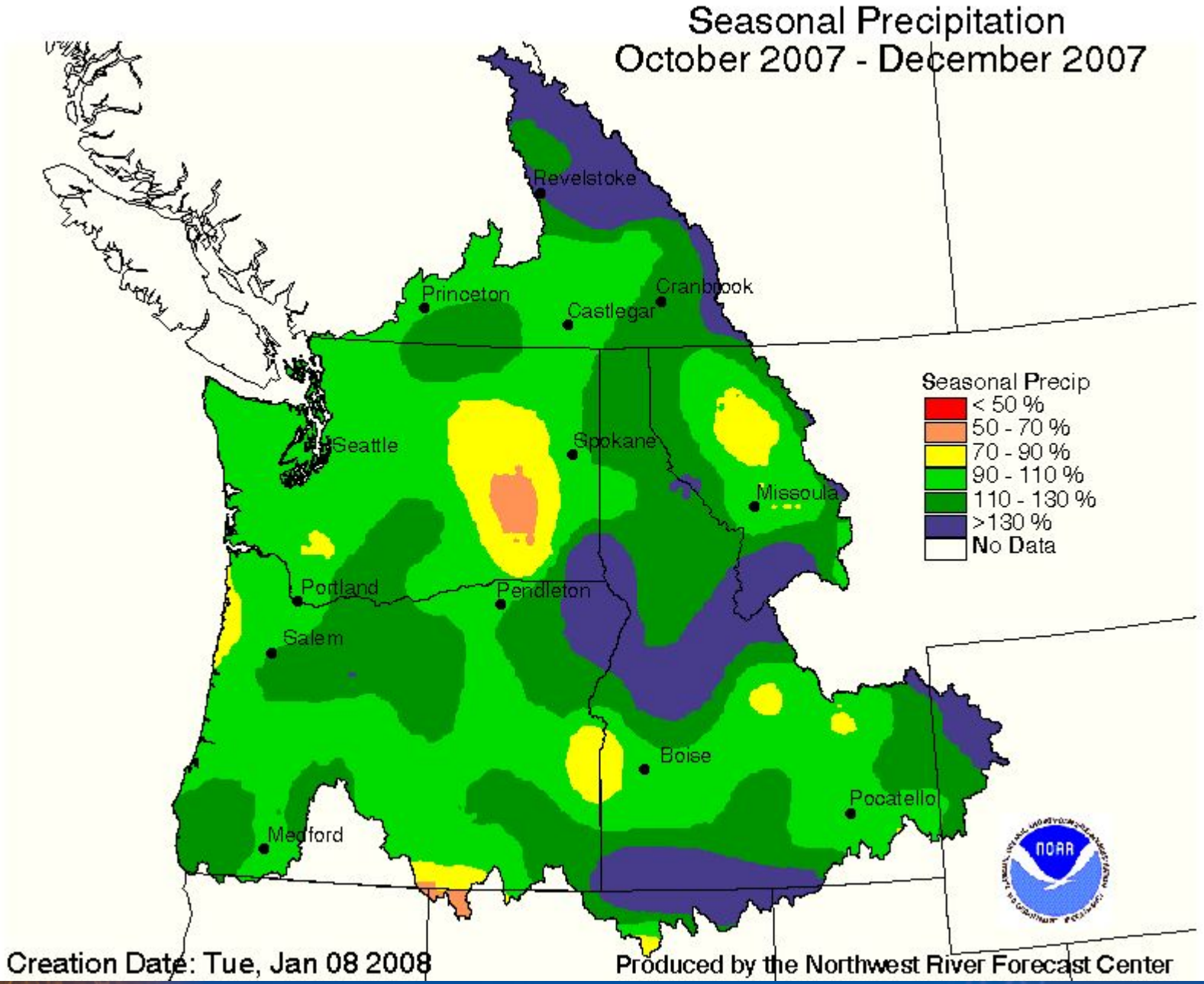
Spring Flood Potential

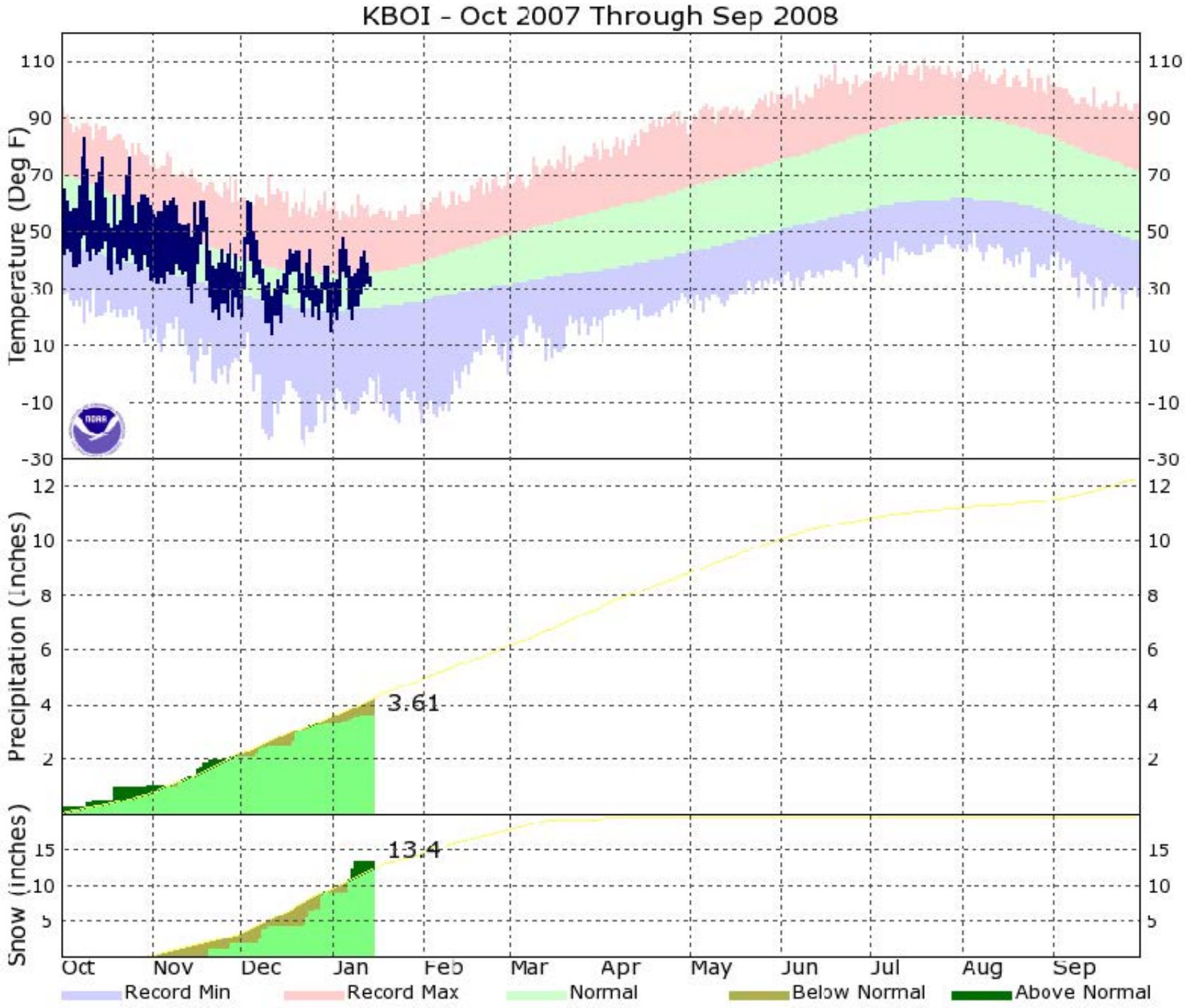
# Drought
# (Near end of 2007 water year)

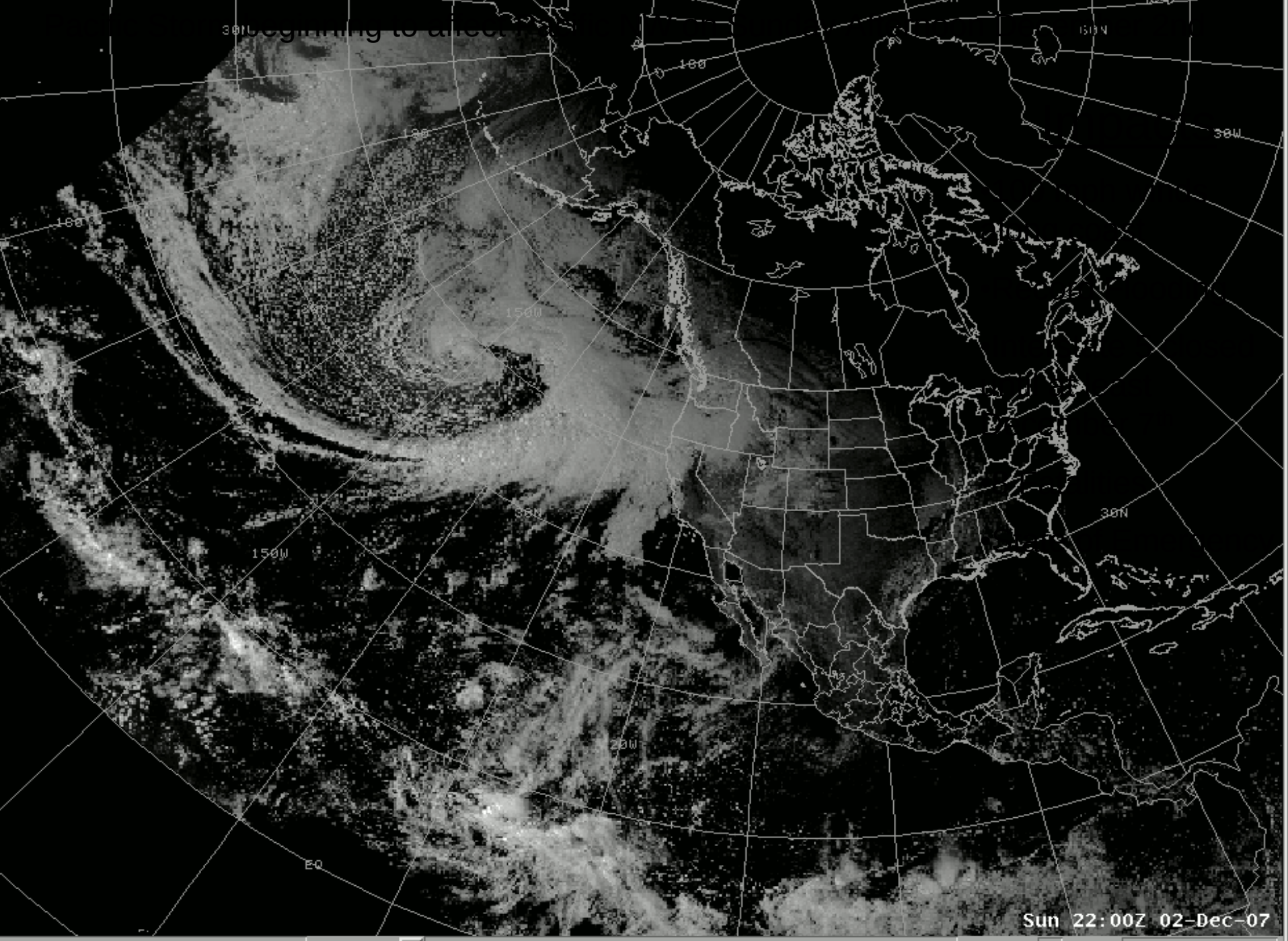


# Drought current




Seasonal Precipitation
October 2007 - December 2007
Revelstoke
Princeton
Cranbrook
Castlegar
Seattle
Spokane
Missoula
Portland
Pendleton
Salem
Boise
Pocatello
Medford
Seasonal Precip
< 50 %
50 - 70 %
70 - 90 %
90 - 110 %
110 - 130 %
>130 %
No Data
Creation Date: Tue, Jan 08 2008
Produced by the Northwest River Forecast Center


KBOI - Oct 2007 Through Sep 2008
Temperature (Deg F)
110
90
70
50
30
10
-10
-30
Precipitation (Inches)
12
10
8
6
4
2
3.61
Snow (inches)
15
10
5
13.4
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Record Min
Record Max
Normal
Below Normal
Above Normal


Sun 22:00Z 02-Dec-07
Radar:
Frames: 20
Time: 17:48 Z 05-Dec-07

# Washington Flooding in December

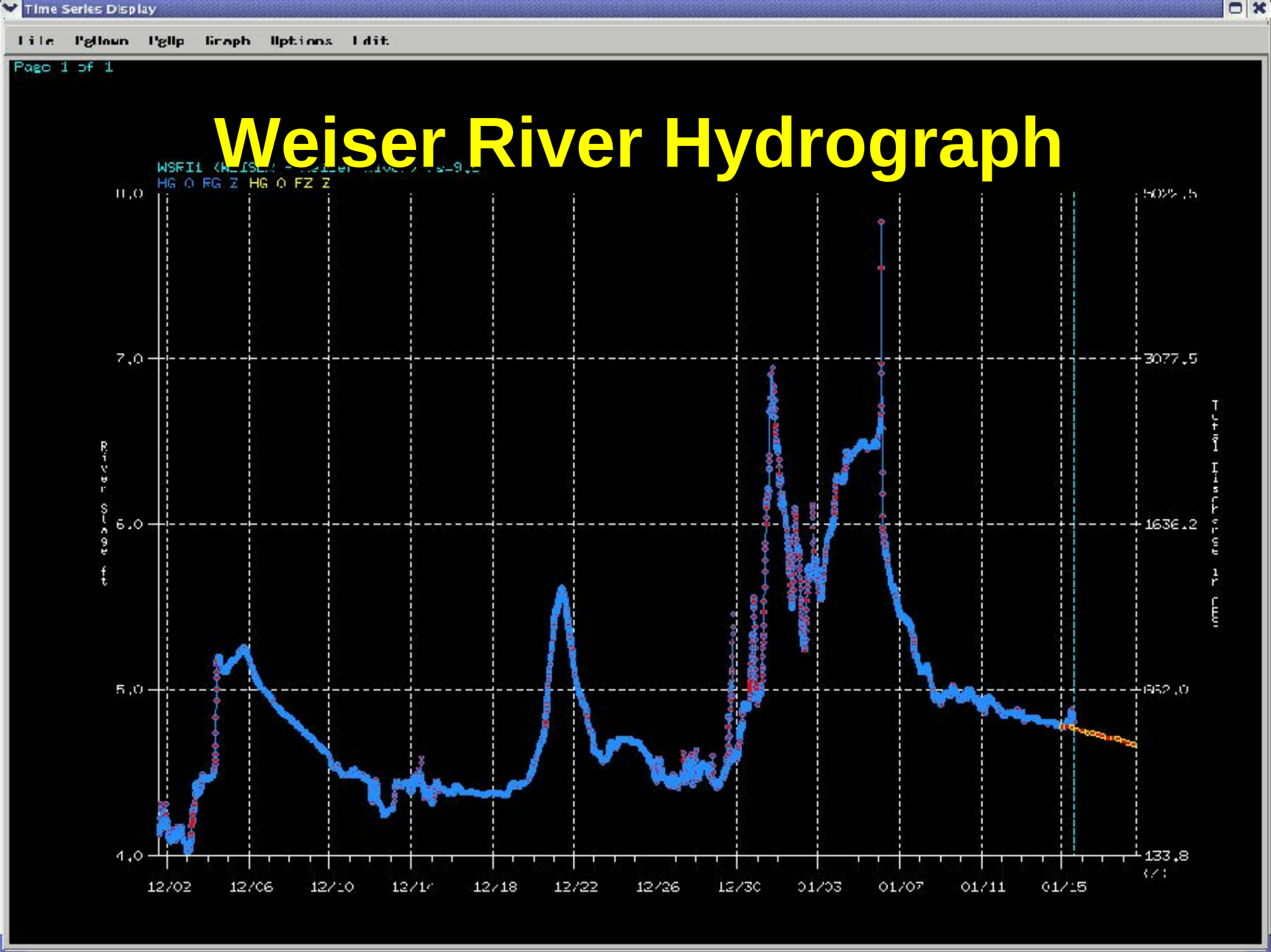
Wind Damage

Interstate 5 Flooding

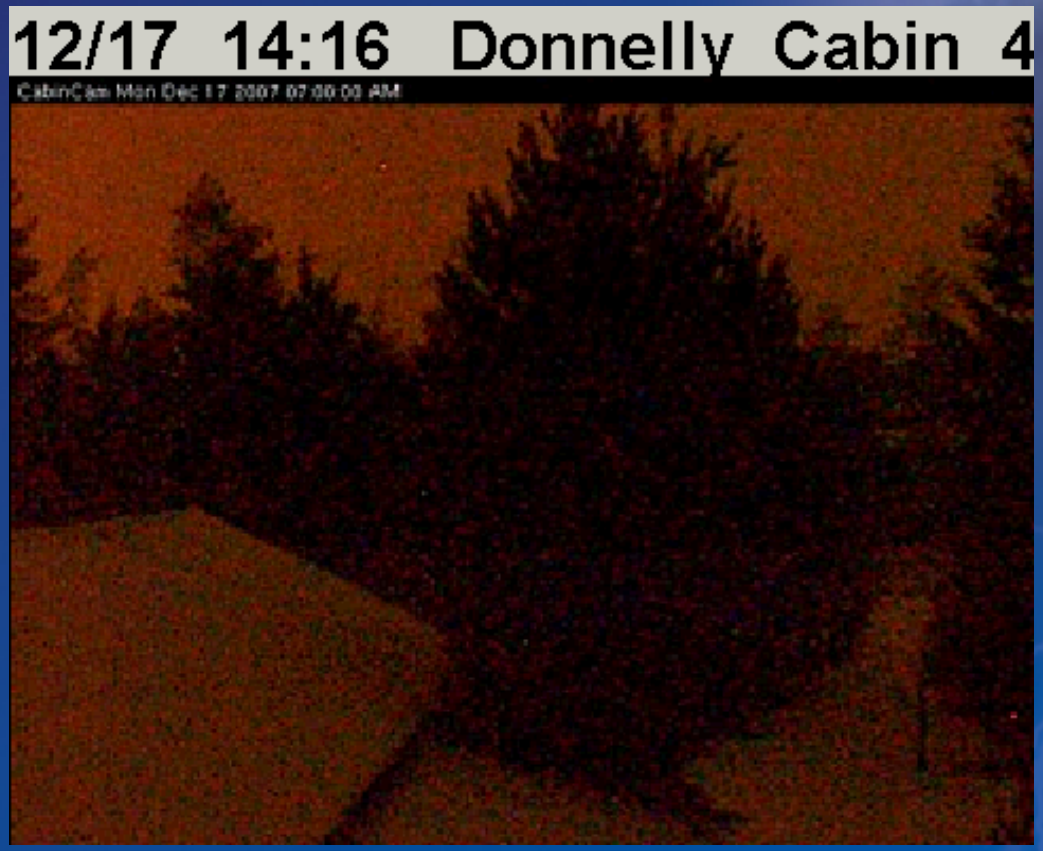
Residential Flooding

Flooding in Centralia

# Weiser River Hydrograph



# Snow accumulation movies Dec 17th – 19th

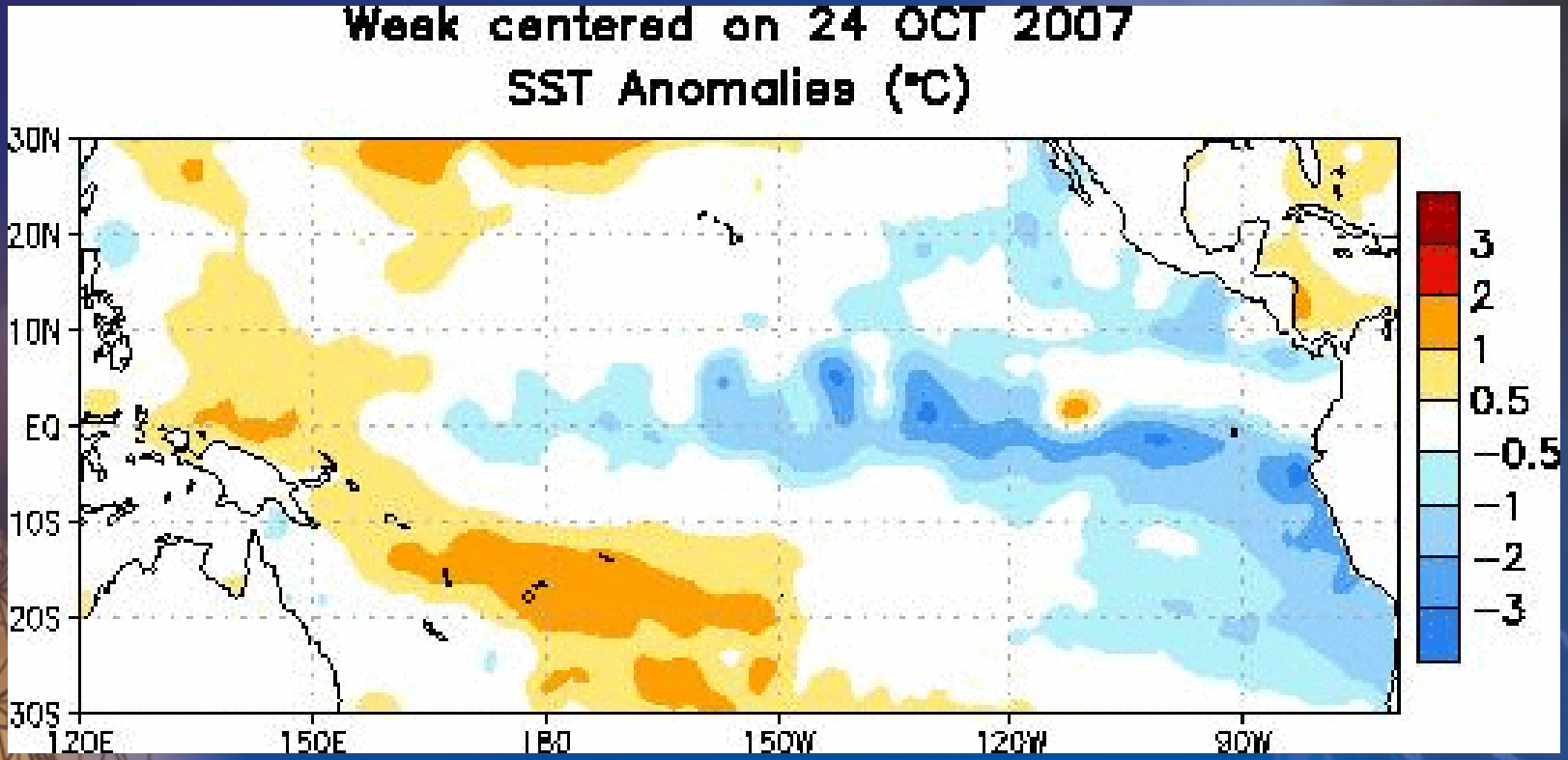


12/18 22:15 Donnelly Cabin 4

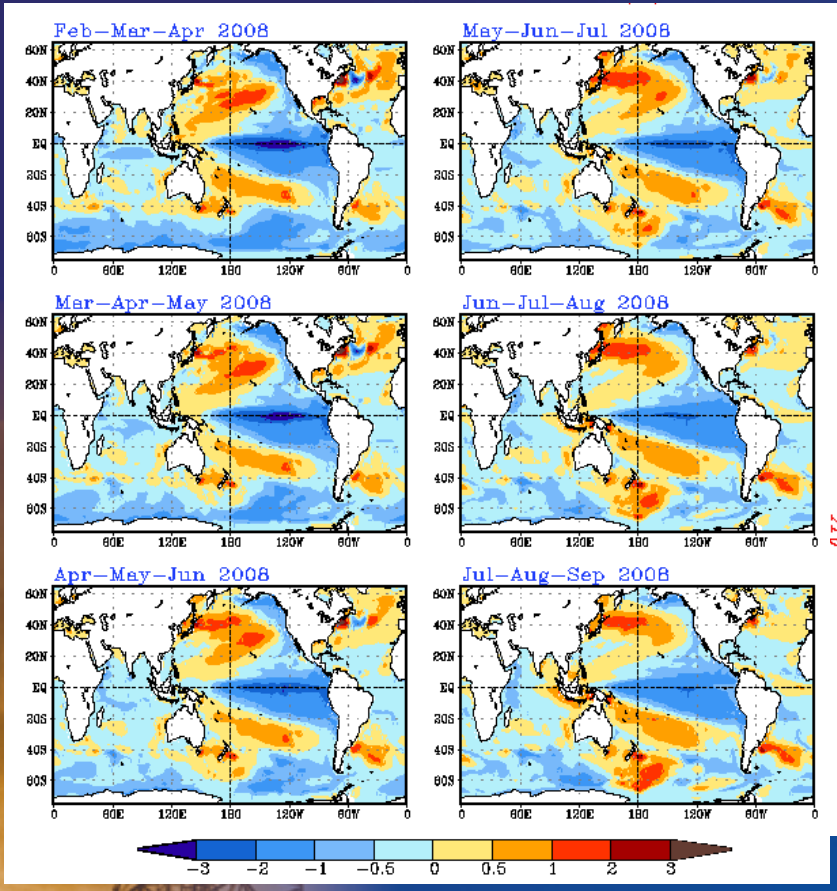
12/19 15:16 Donnelly Cabin 4
CabinCam Wed Dec 19 2007 08:00:00 AM

12/19 21:16 Donnelly Cabin 4
CabinCam Wed Dec 19 2007 02:00:00 PM

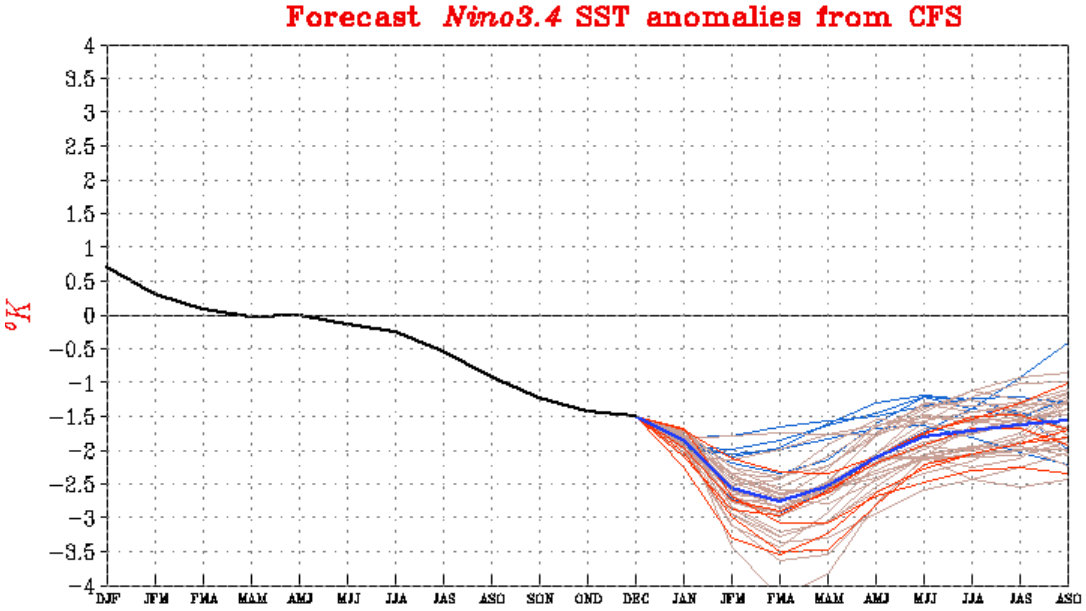
# Equatorial Sea Surface Temperature Anomolies



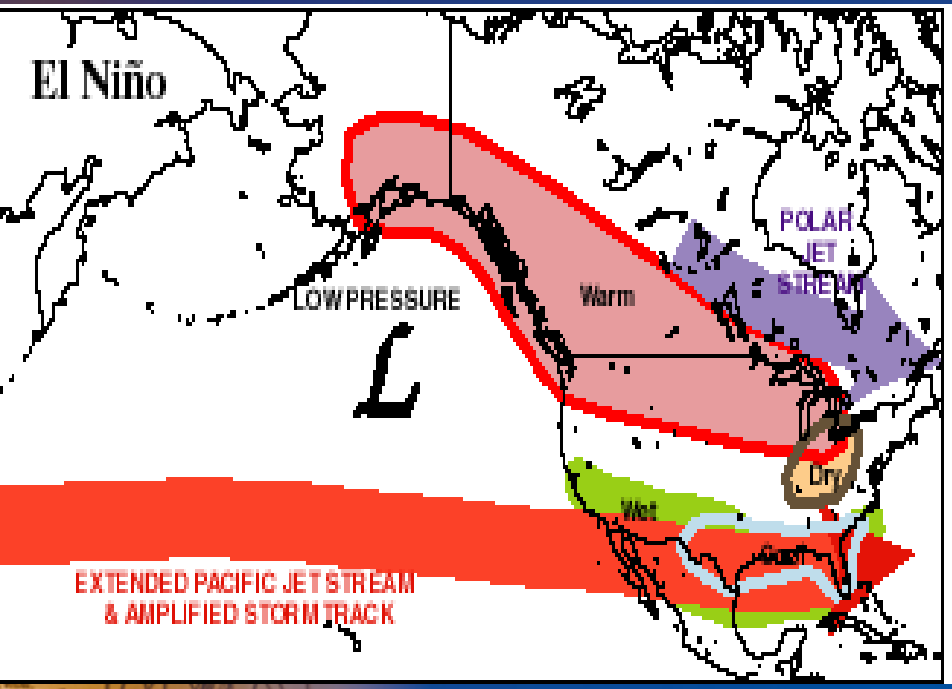
# SST Outlook: NCEP CFS Forecast Issued 31 December 2007

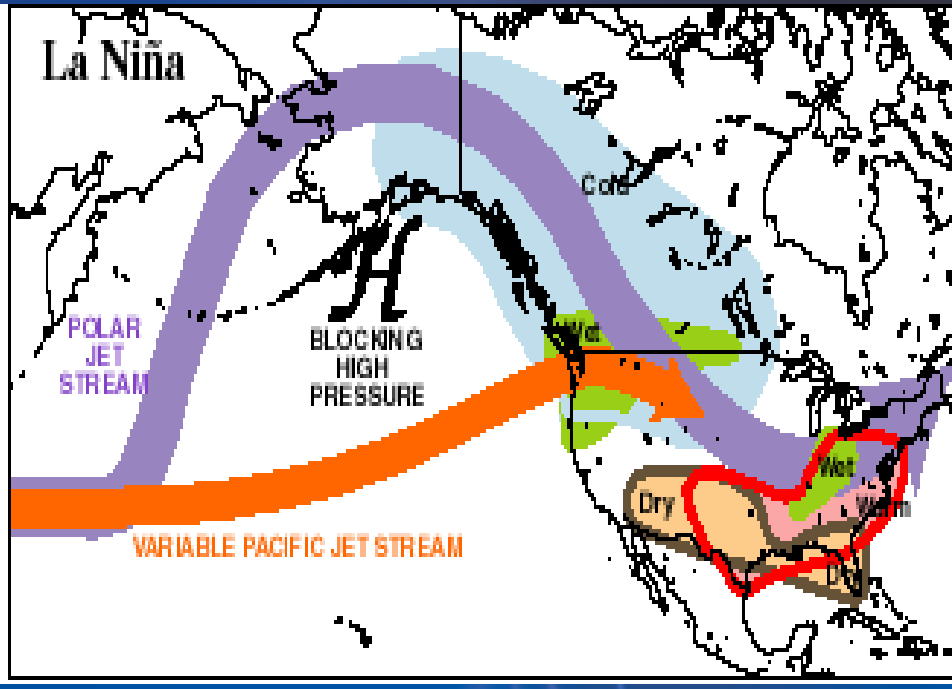


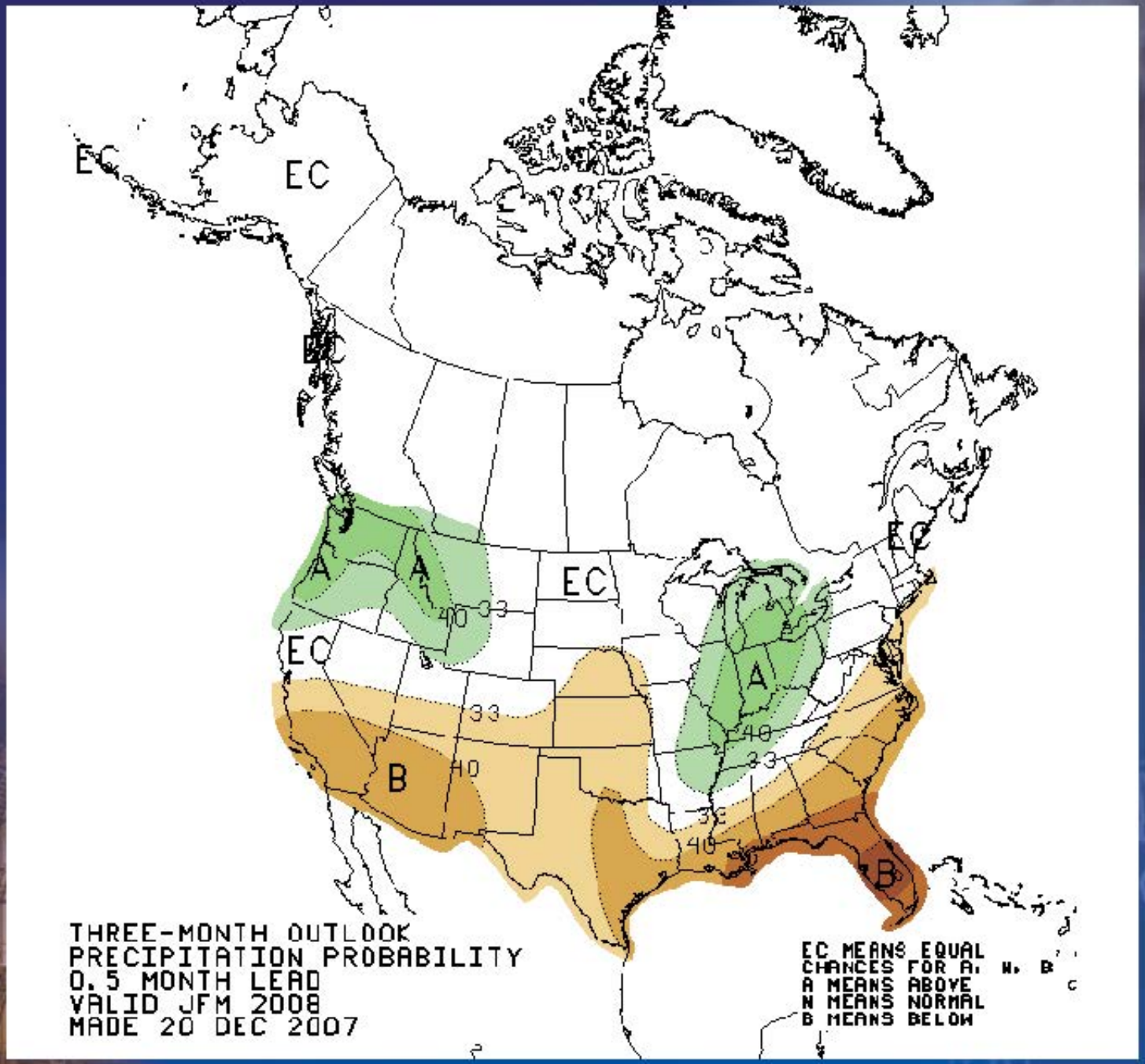

**The CFS ensemble mean (heavy blue line) predicts La Niña will strengthen during the next three-four months.**

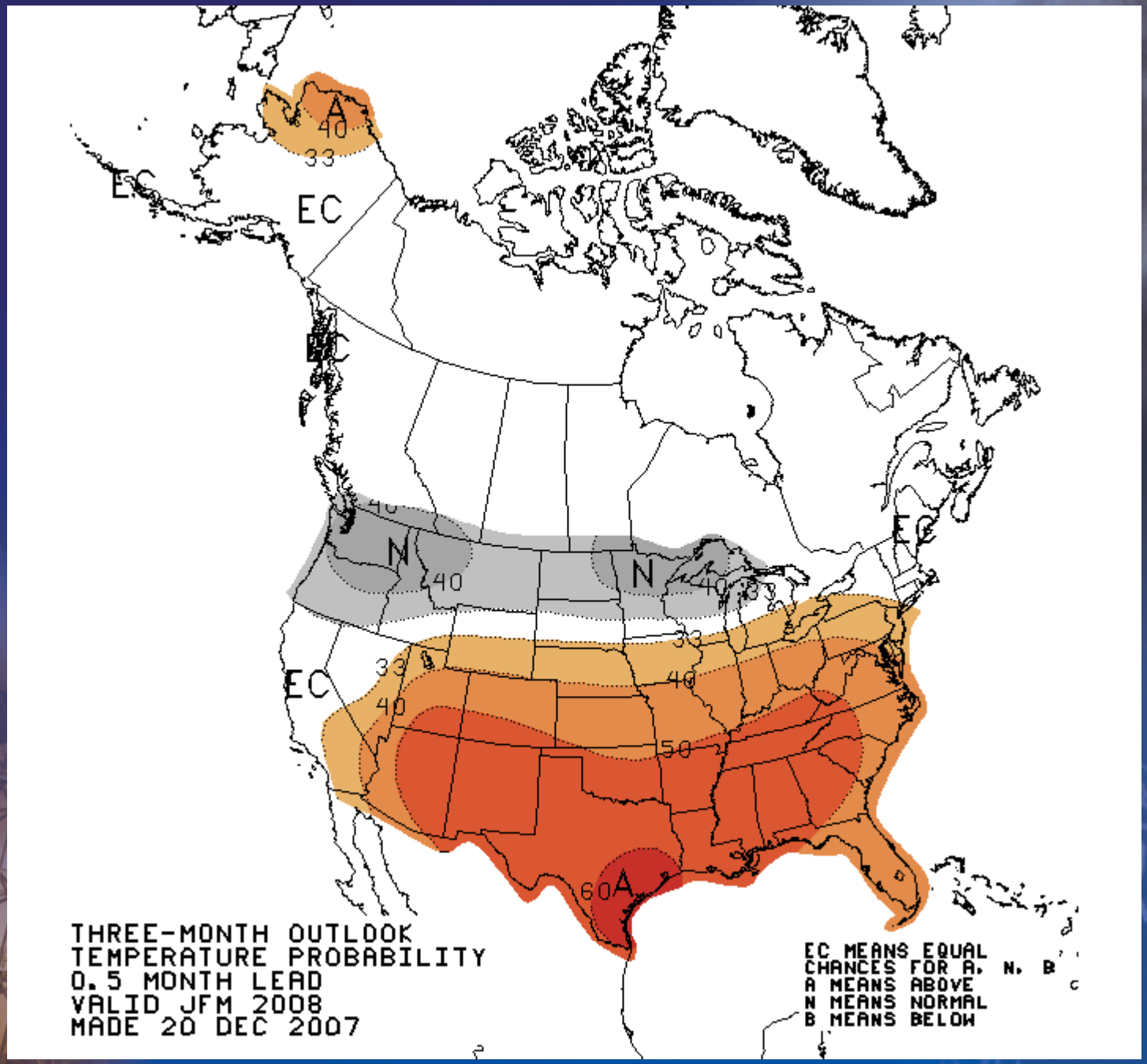


# Typical North American Impacts

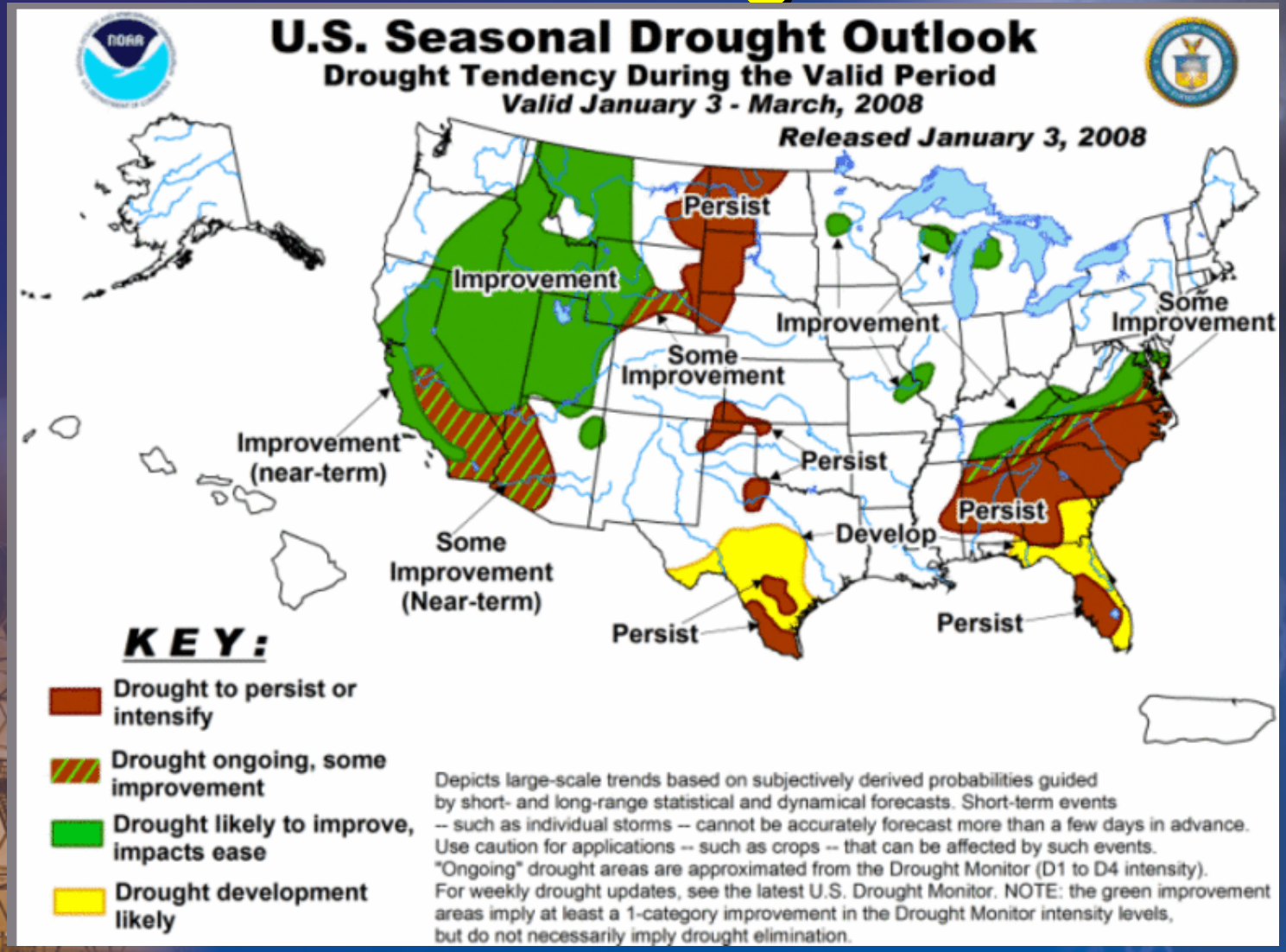


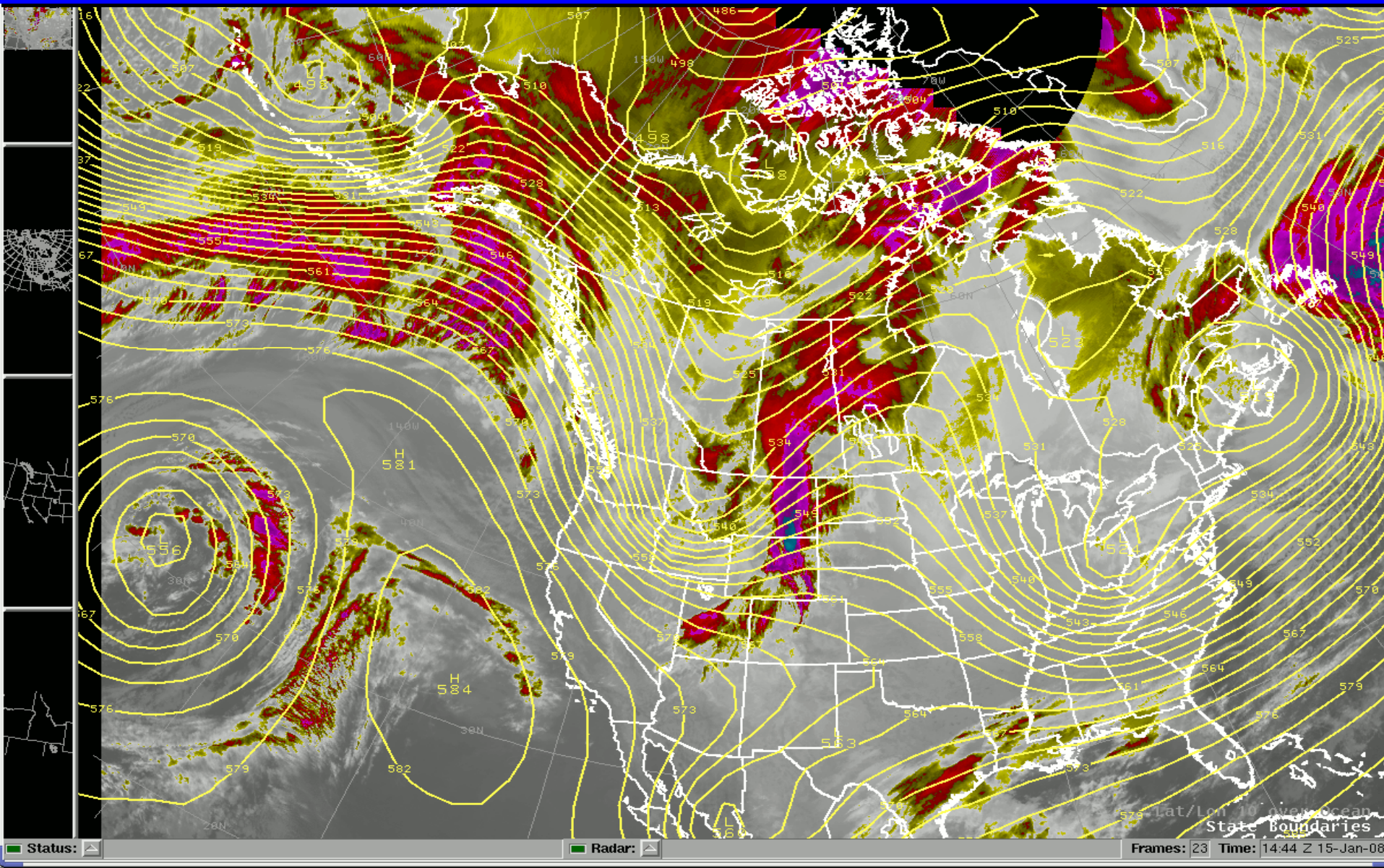

EC
EC
EC
A
A
40
33
EC
EC
EC
33
B
40
A
40
33
40
B
THREE-MONTH OUTLOOK
PRECIPITATION PROBABILITY
0.5 MONTH LEAD
VALID JFM 2008
MADE 20 DEC 2007
EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW


THREE-MONTH OUTLOOK
TEMPERATURE PROBABILITY
0.5 MONTH LEAD
VALID JFM 2008
MADE 20 DEC 2007
EC MEANS EQUAL
CHANCES FOR A, N, B
A MEANS ABOVE
N MEANS NORMAL
B MEANS BELOW
A
40
33
EC
N
50
60

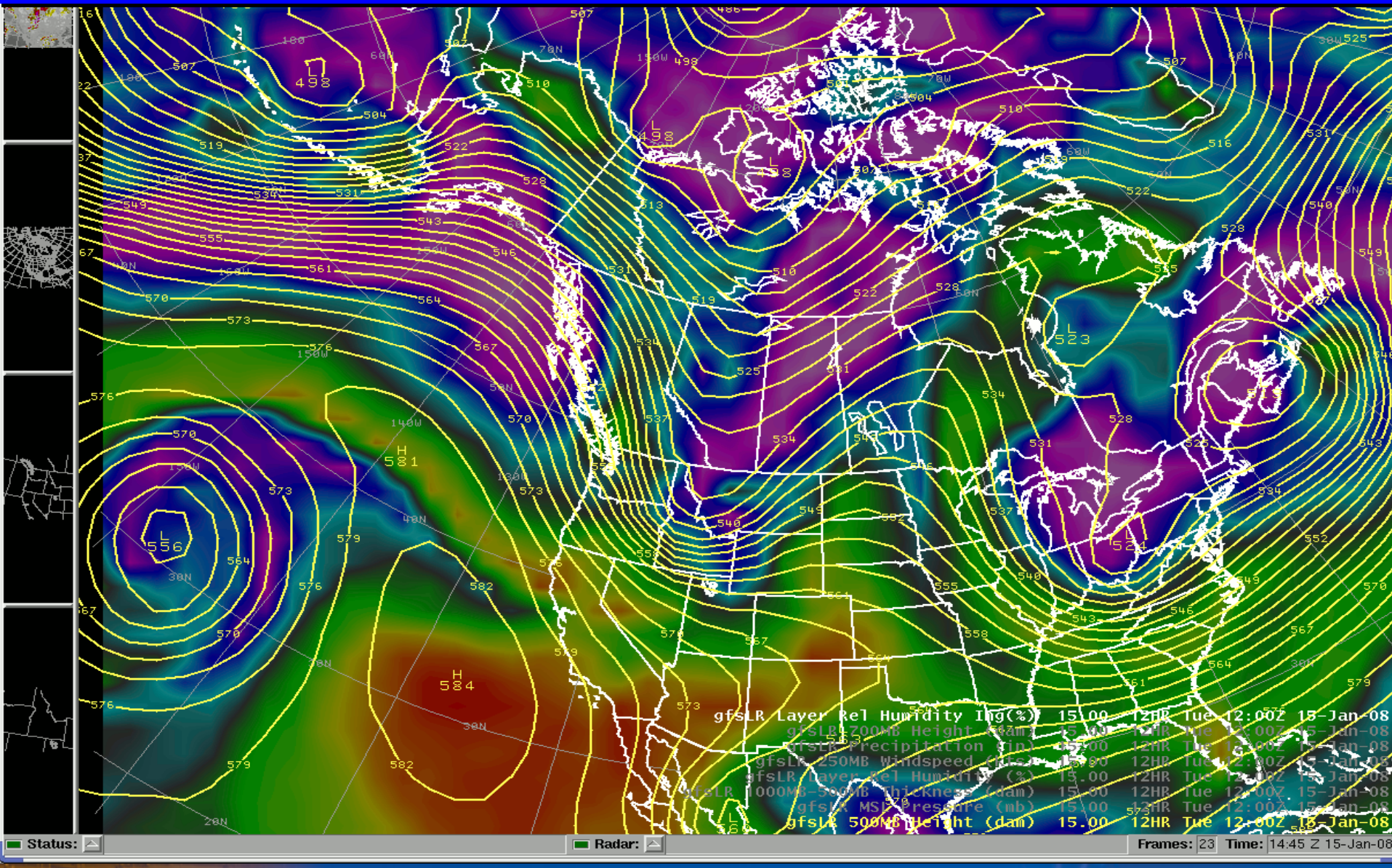
# Seasonal Drought Outlook



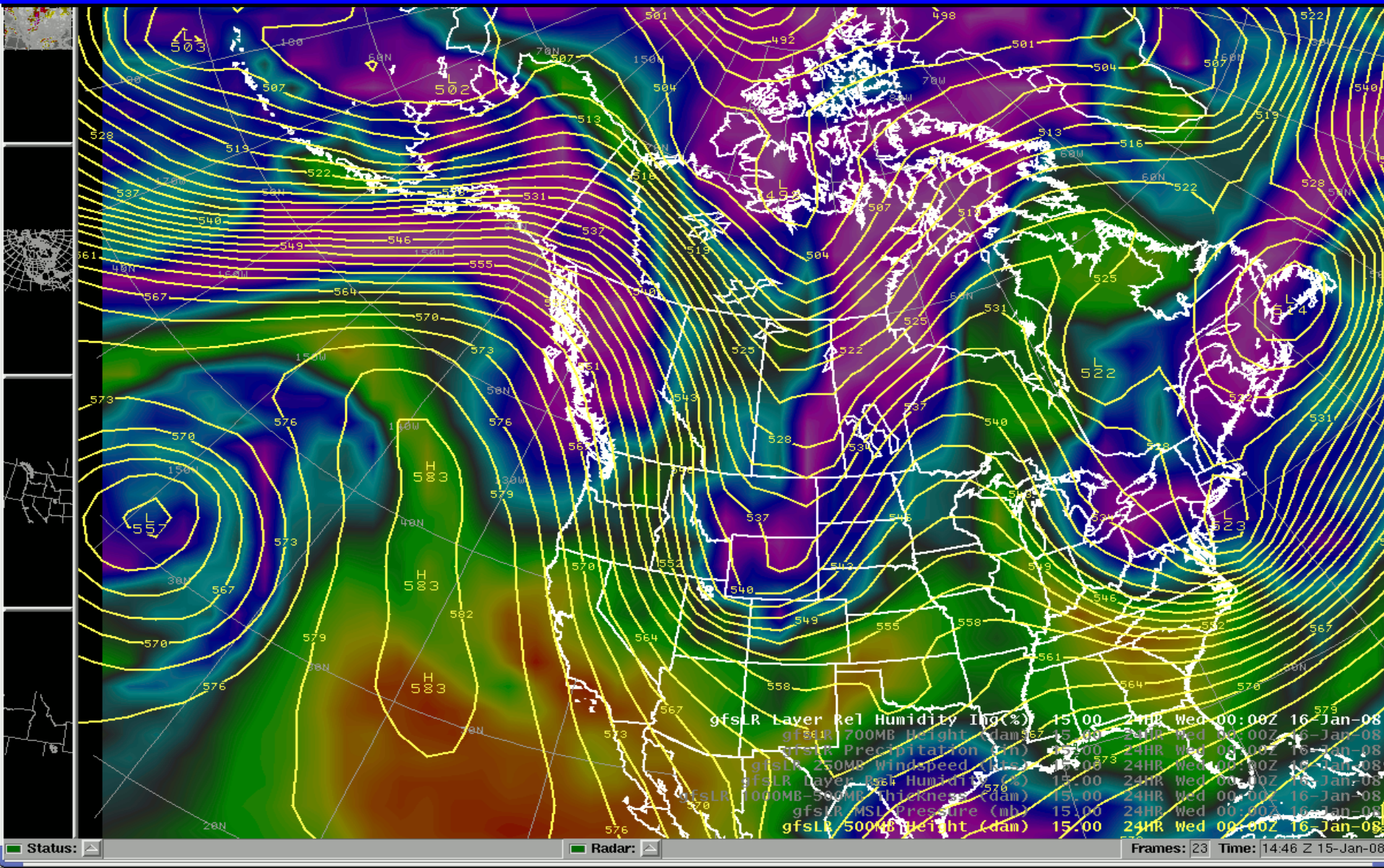
# 500 mb Heights / IR Satellite  Jan 15, morning



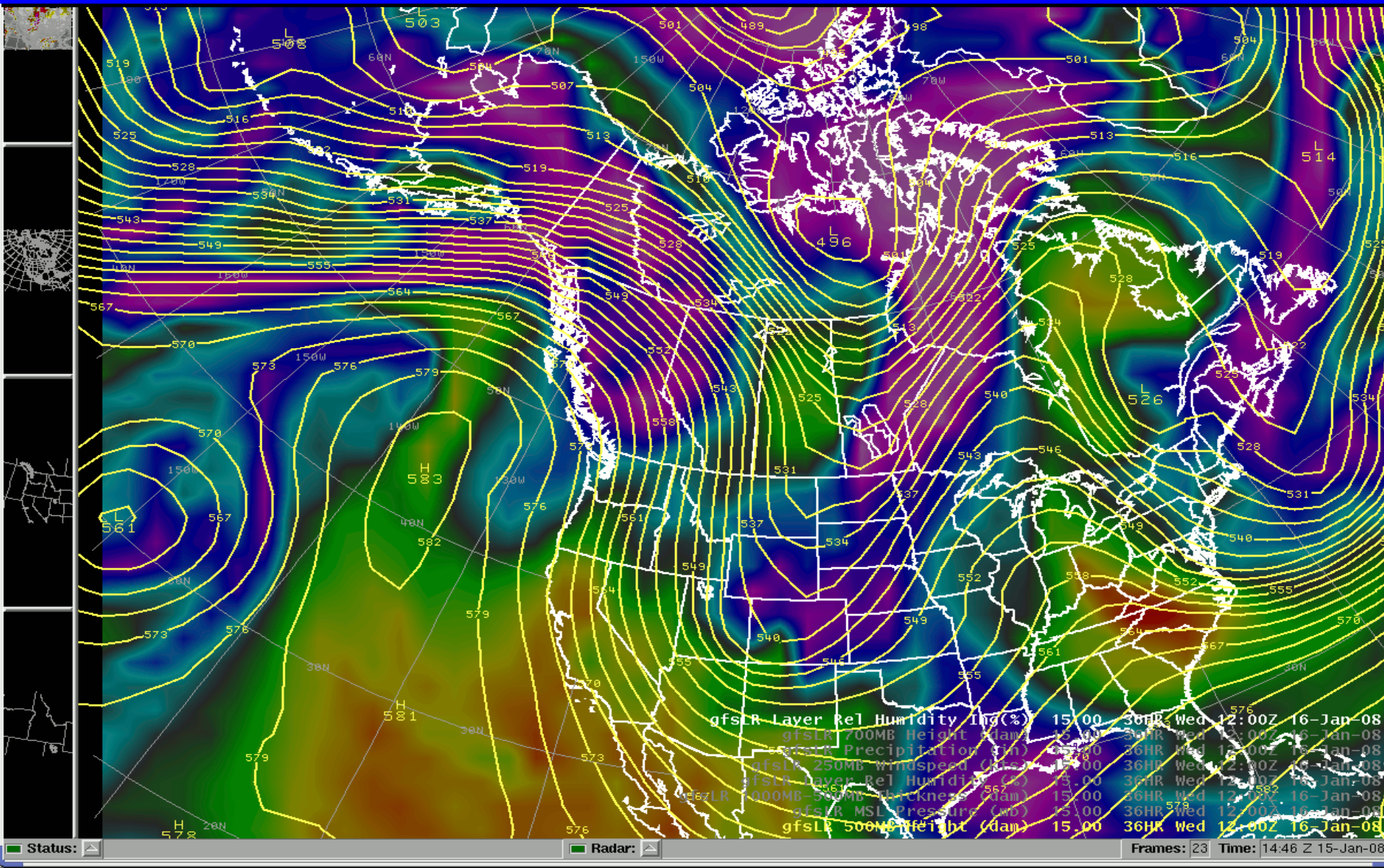
# 500 mb Heights / Relative Humidity  Jan 15, morning



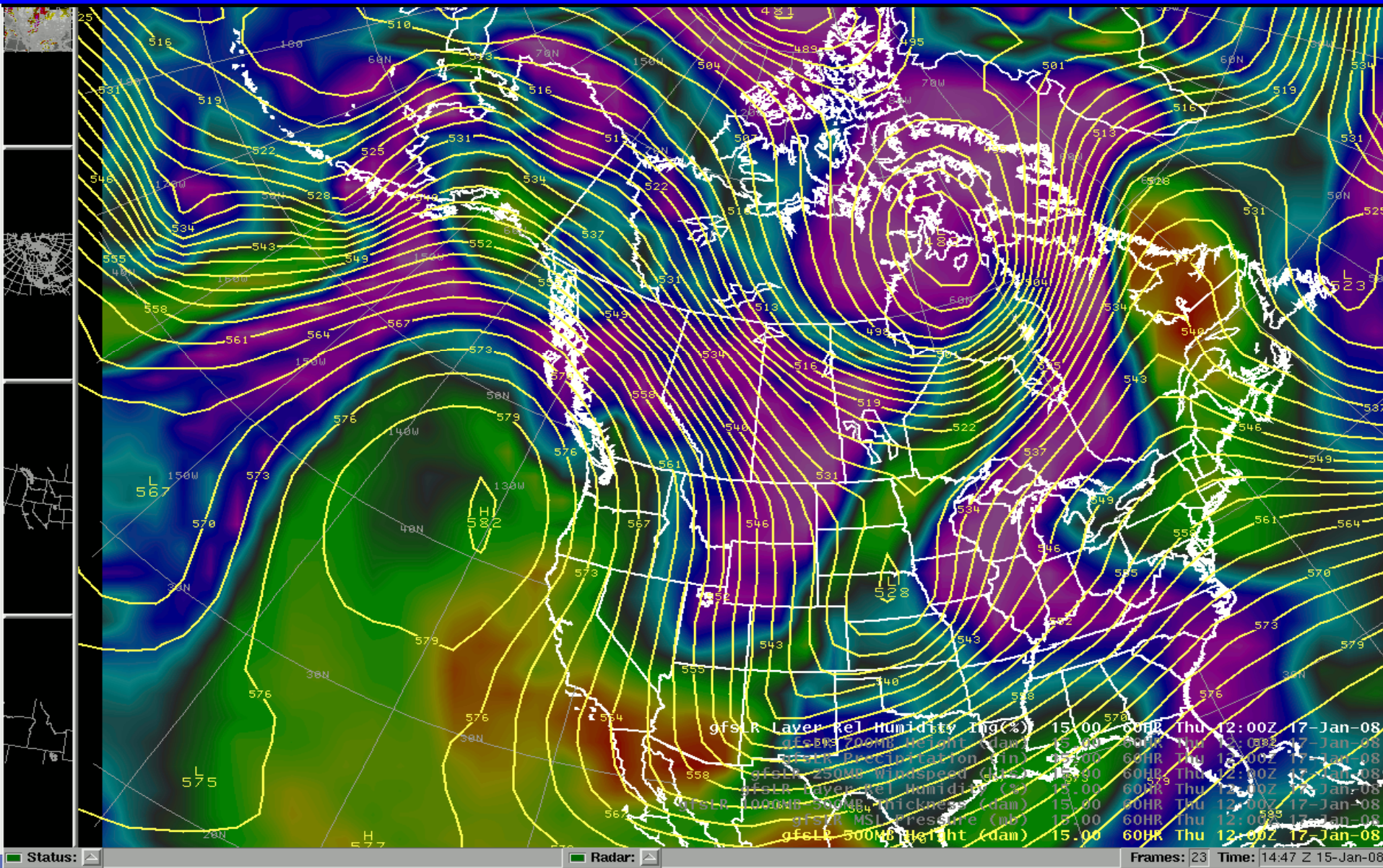
# 500 mb Heights / Relative Humidity  Jan 15, afternoon



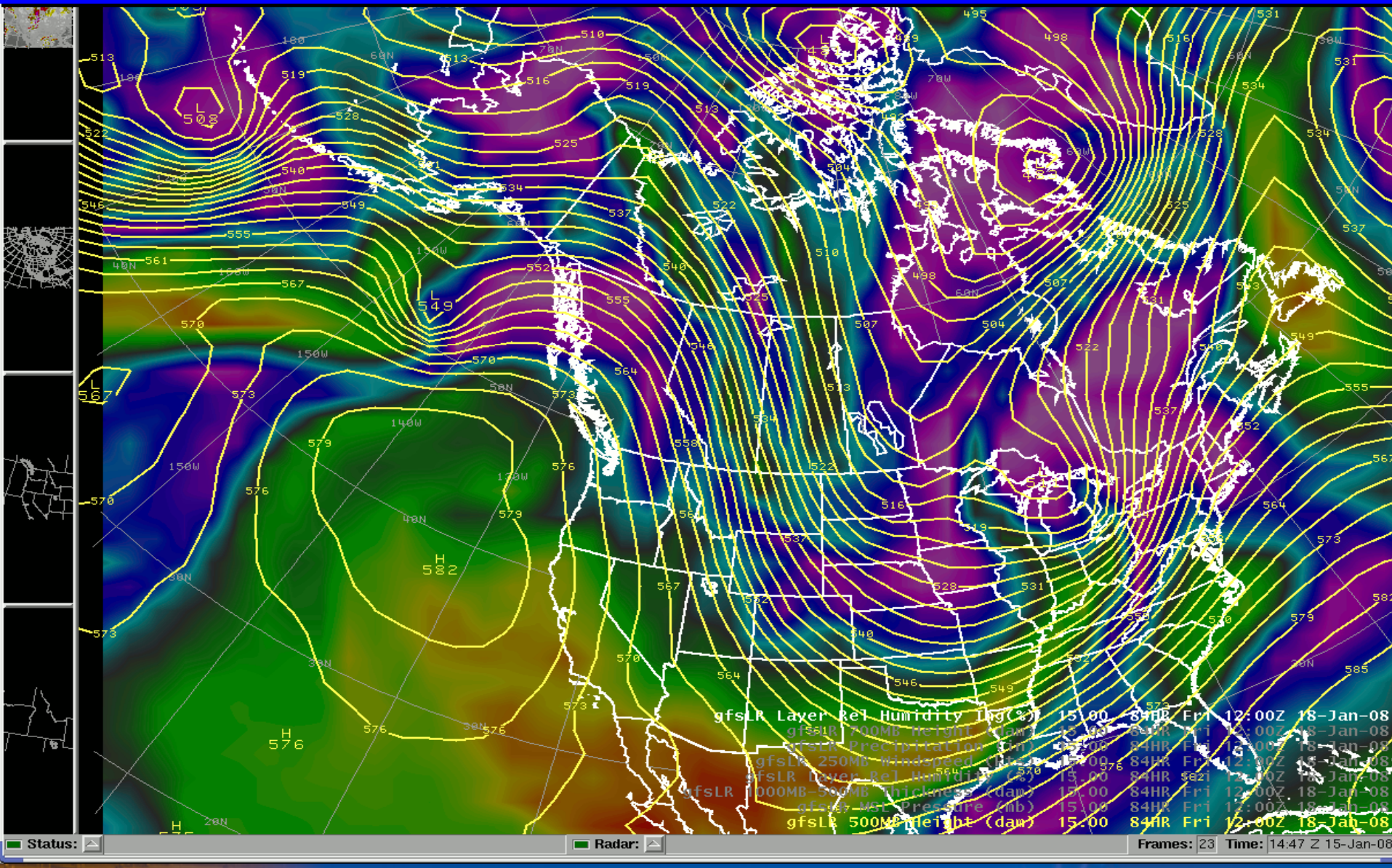
# 500 mb Heights / Relative Humidity  Jan 16, morning



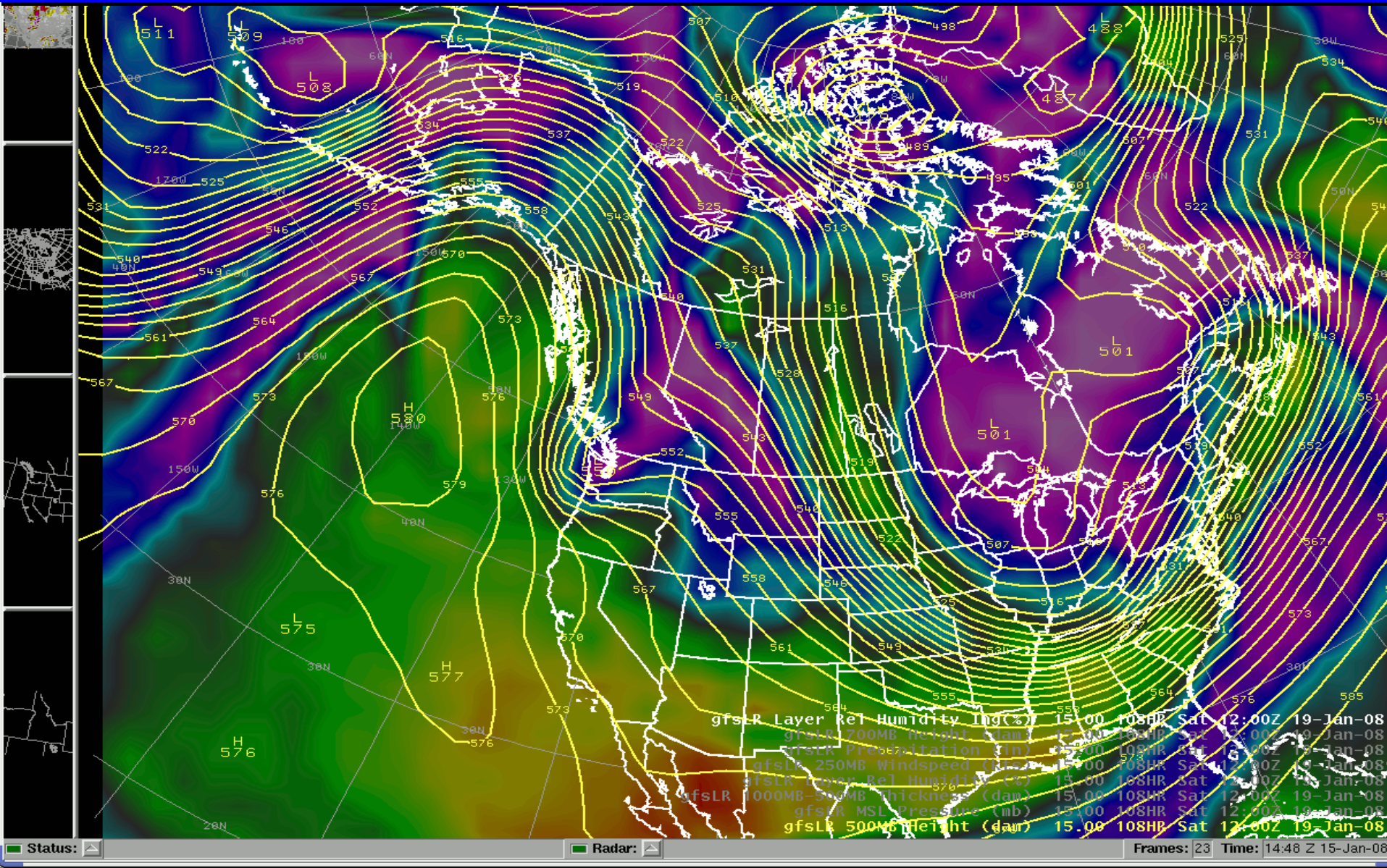
# 500 mb Heights / Relative Humidity  Jan 17, morning



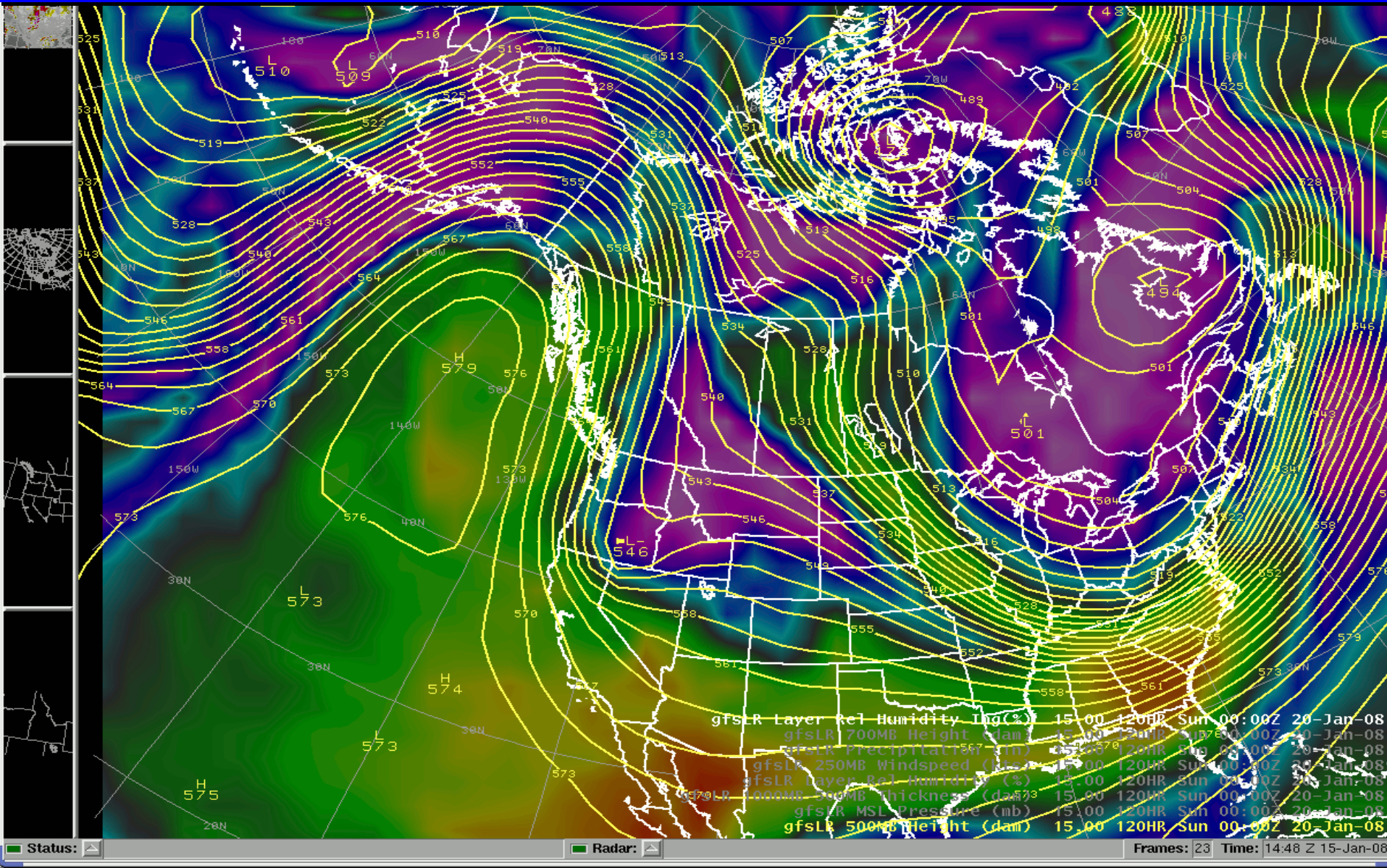
# 500 mb Heights / Relative Humidity  Jan 18, morning



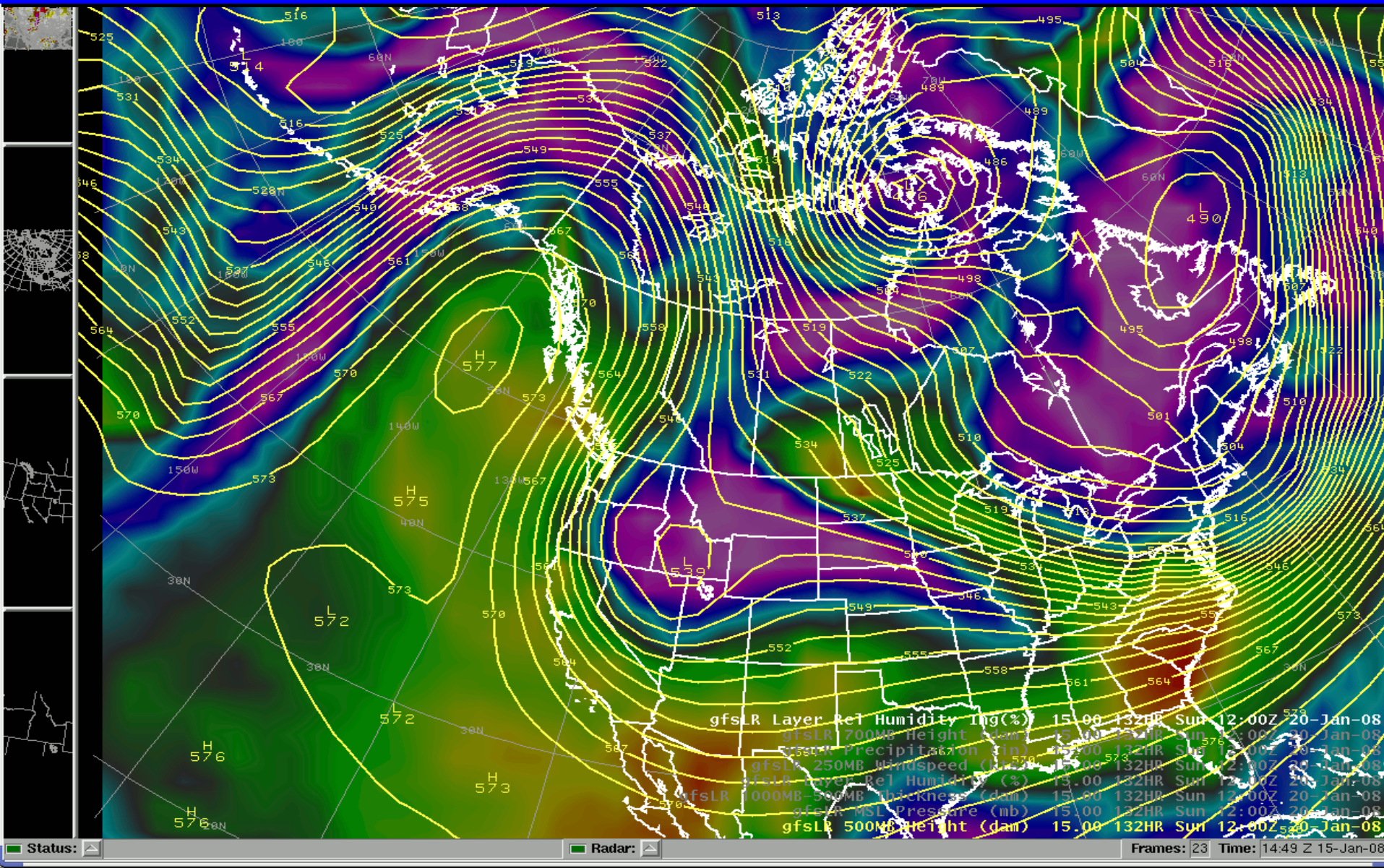
# 500 mb Heights / Relative Humidity  Jan 19, morning



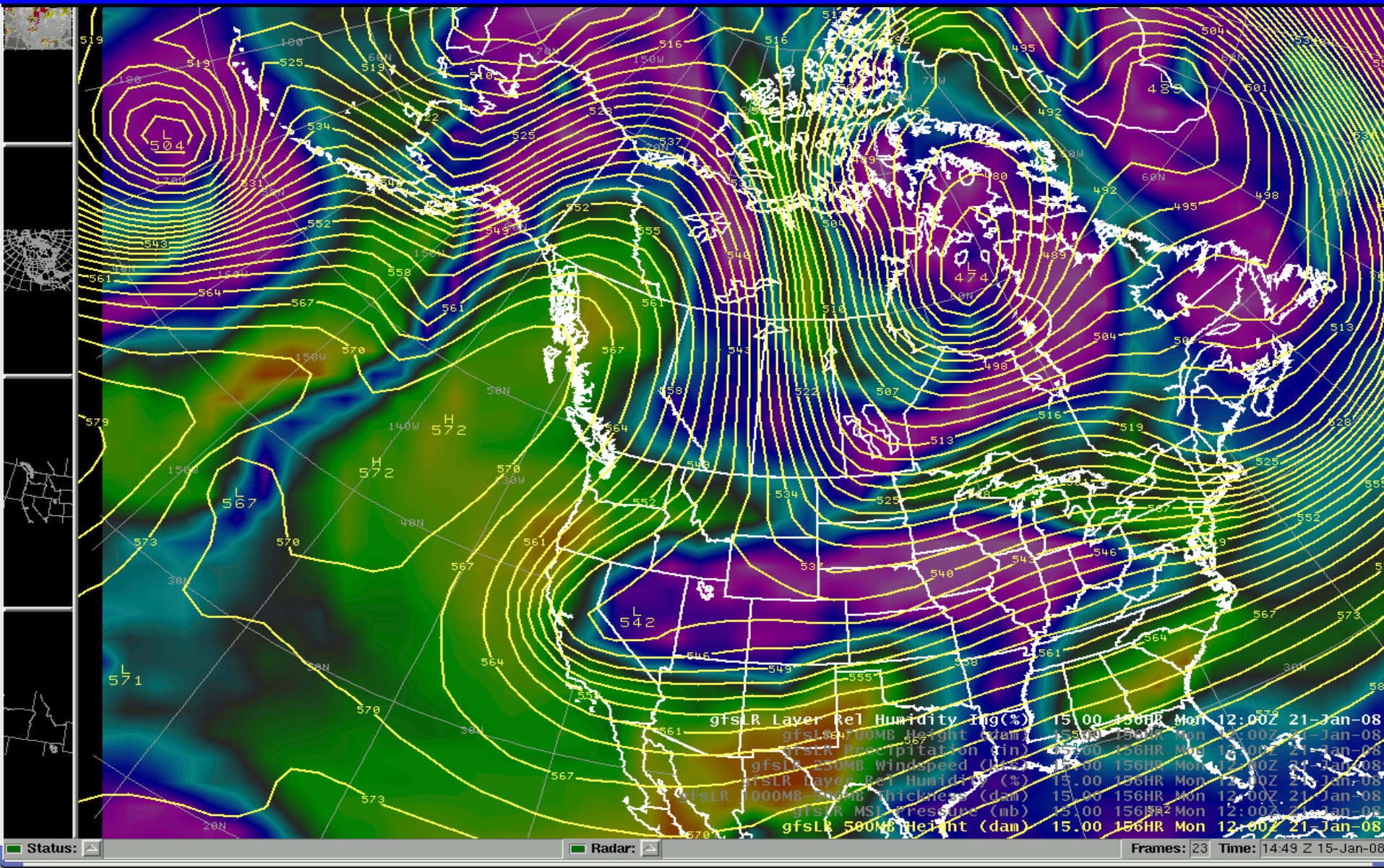
# 500 mb Heights / Relative Humidity  Jan 19, afternoon



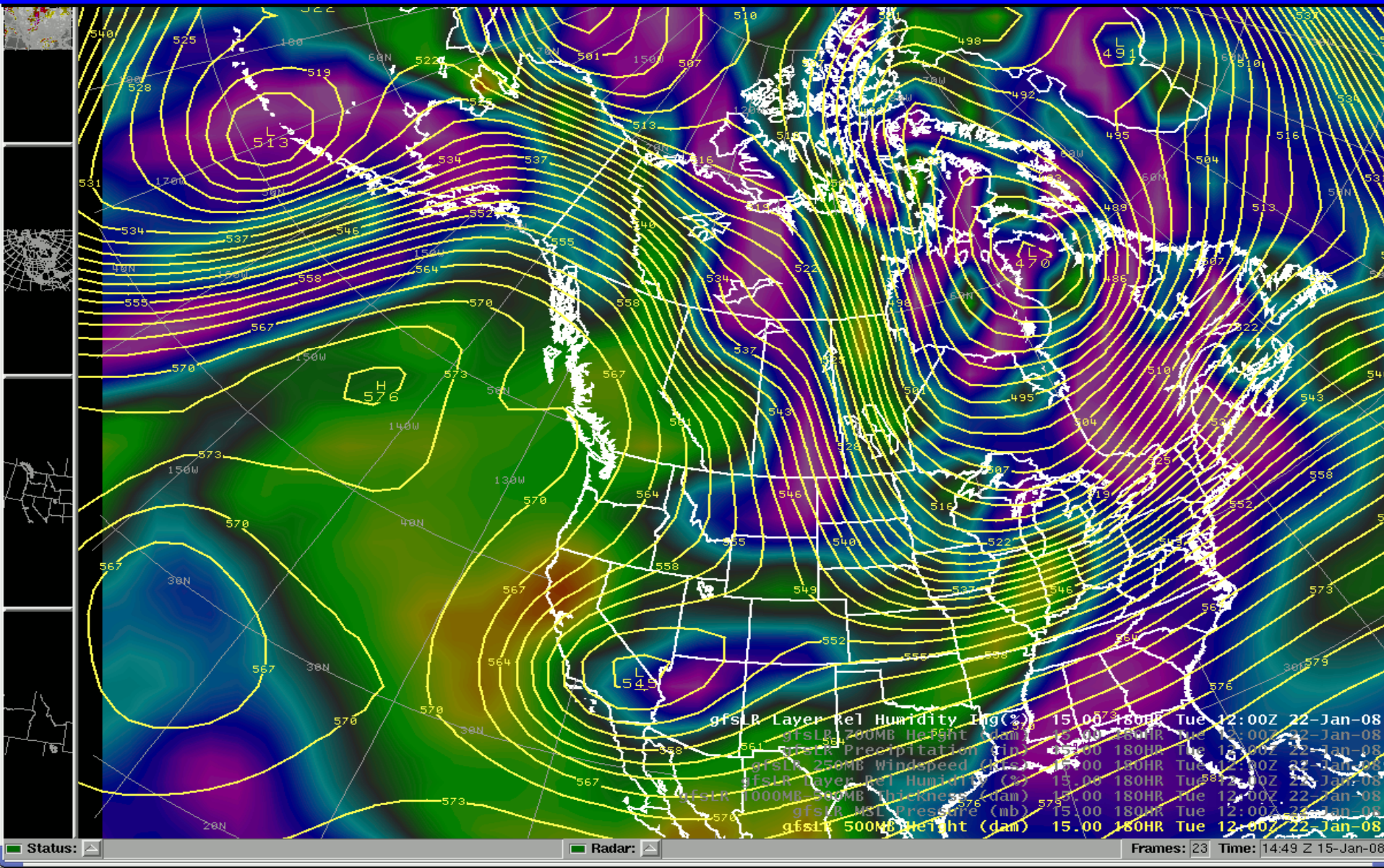
# 500 mb Heights / Relative Humidity  Jan 20, morning



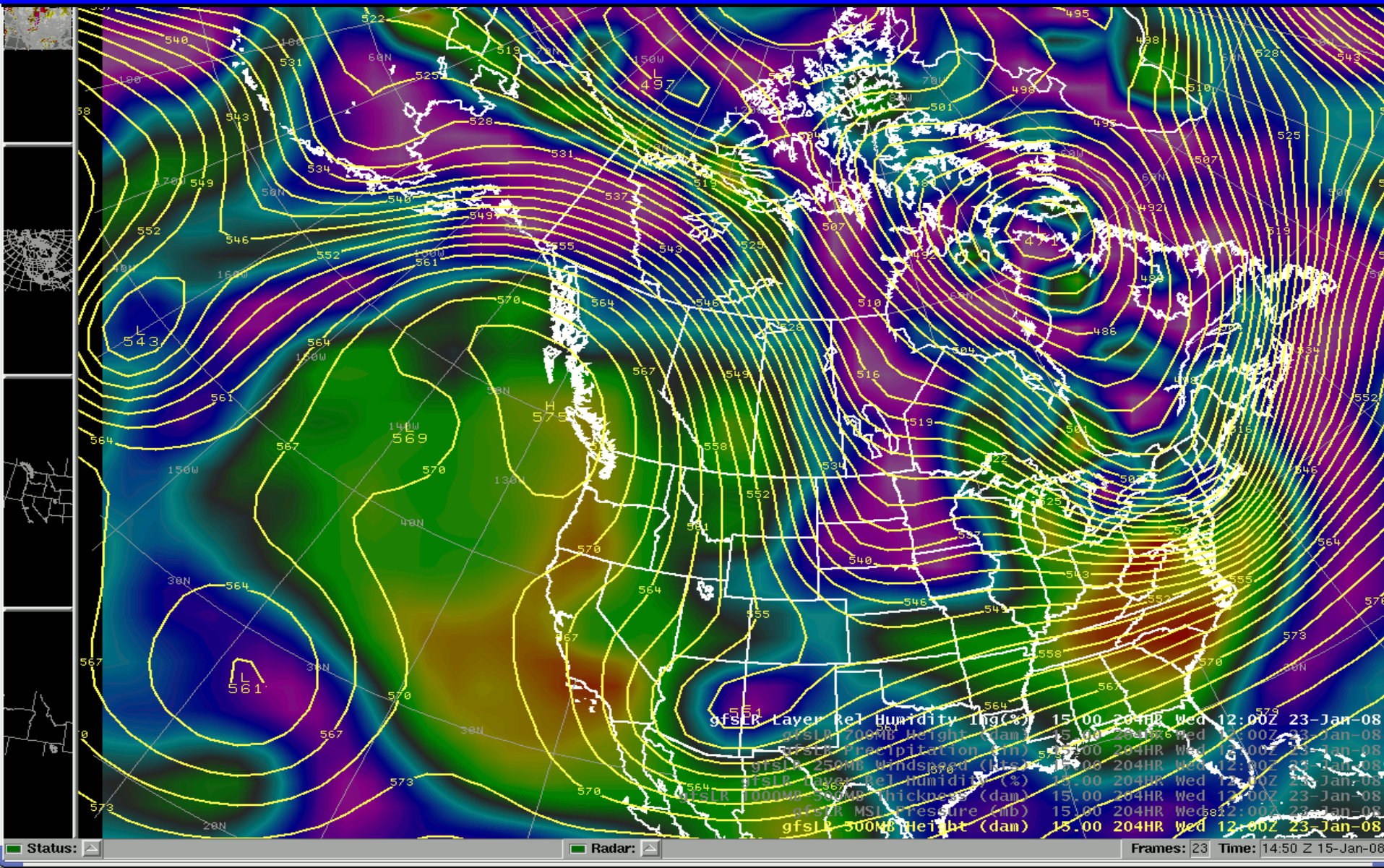
# 500 mb Heights / Relative Humidity  Jan 21, morning



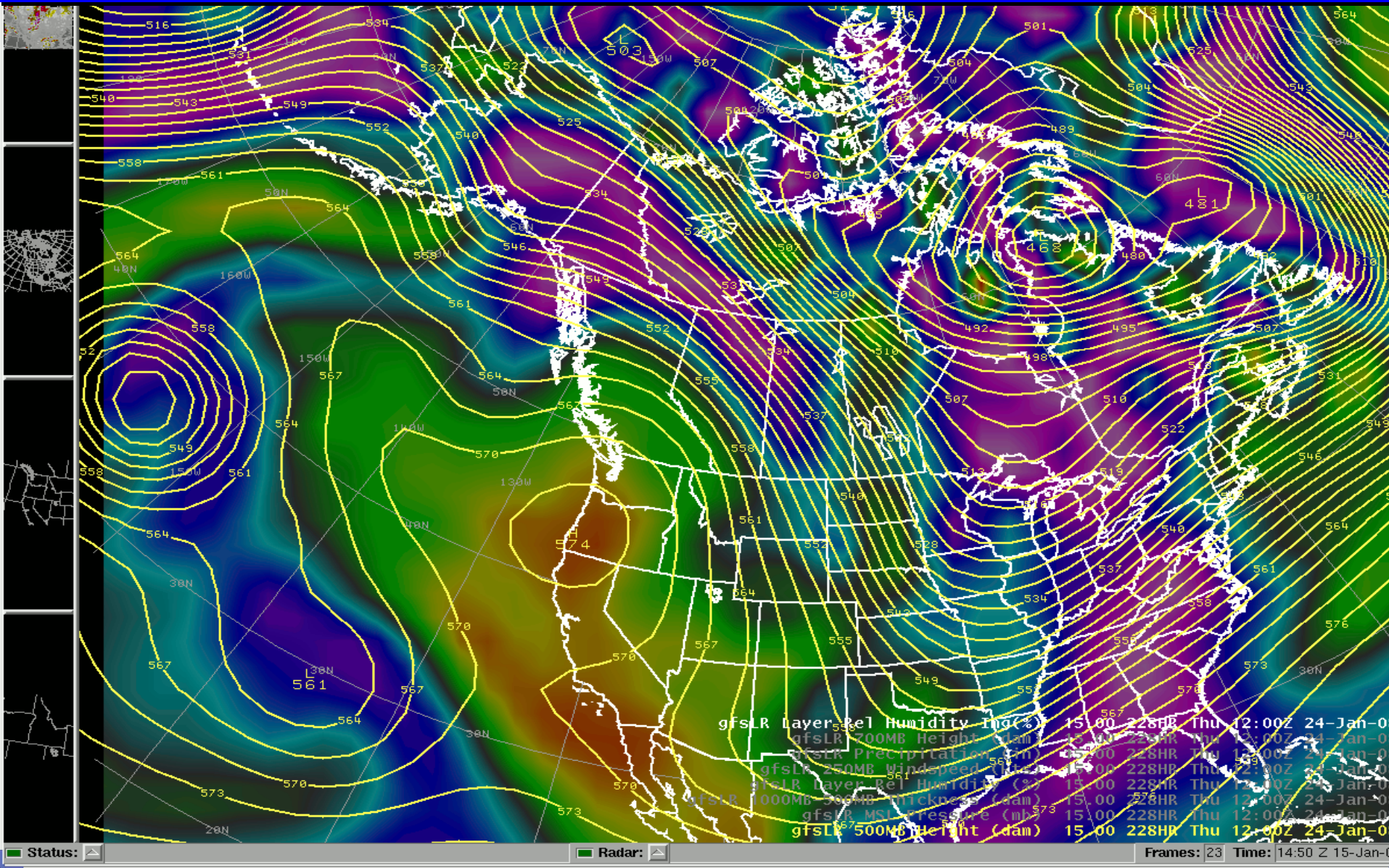
# 500 mb Heights / Relative Humidity  Jan 22, morning



# 500 mb Heights / Relative Humidity  Jan 23, morning



# 500 mb Heights / Relative Humidity  Jan 24, morning



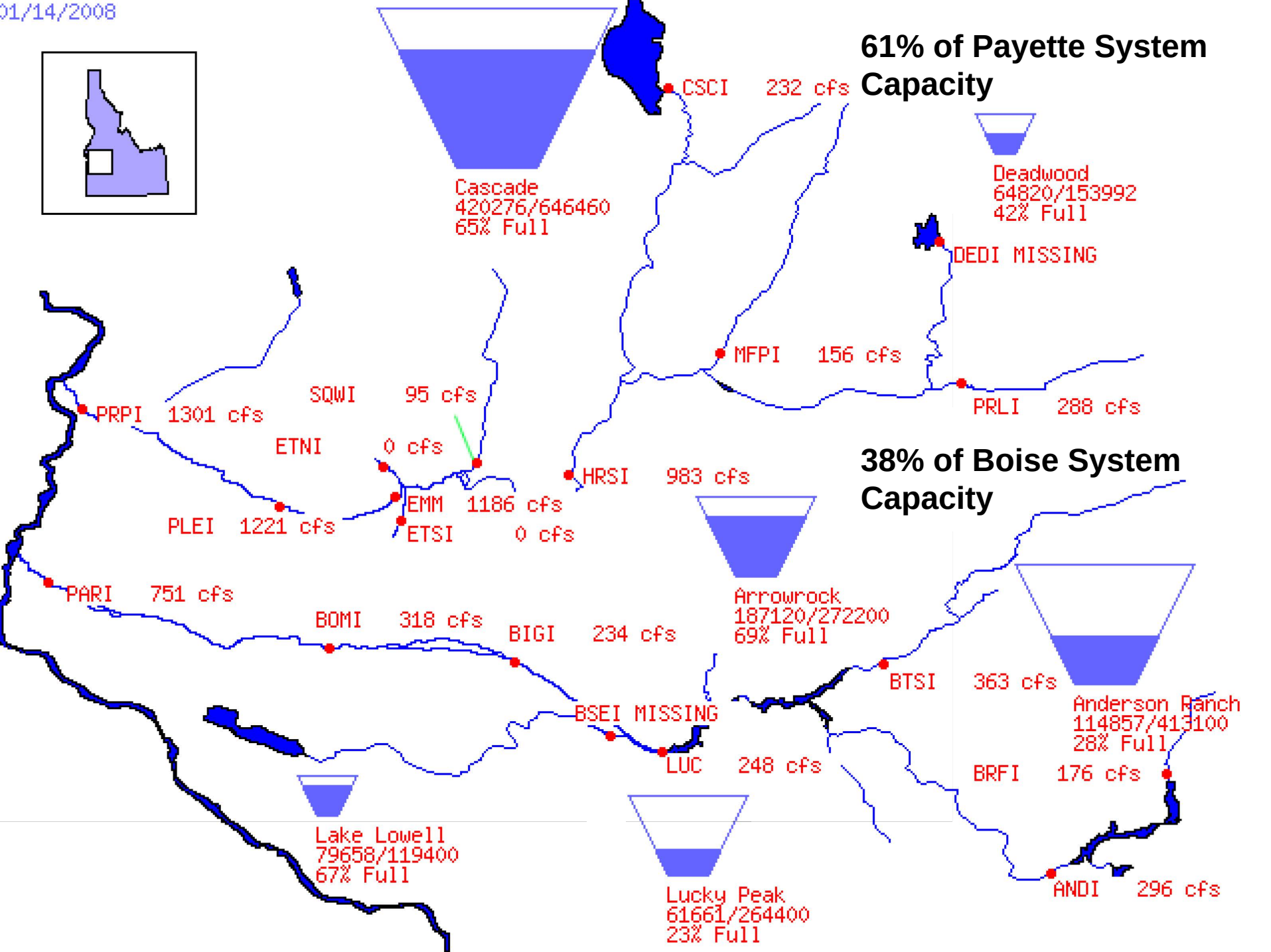
RECLAMATION

*Managing Water in the West*

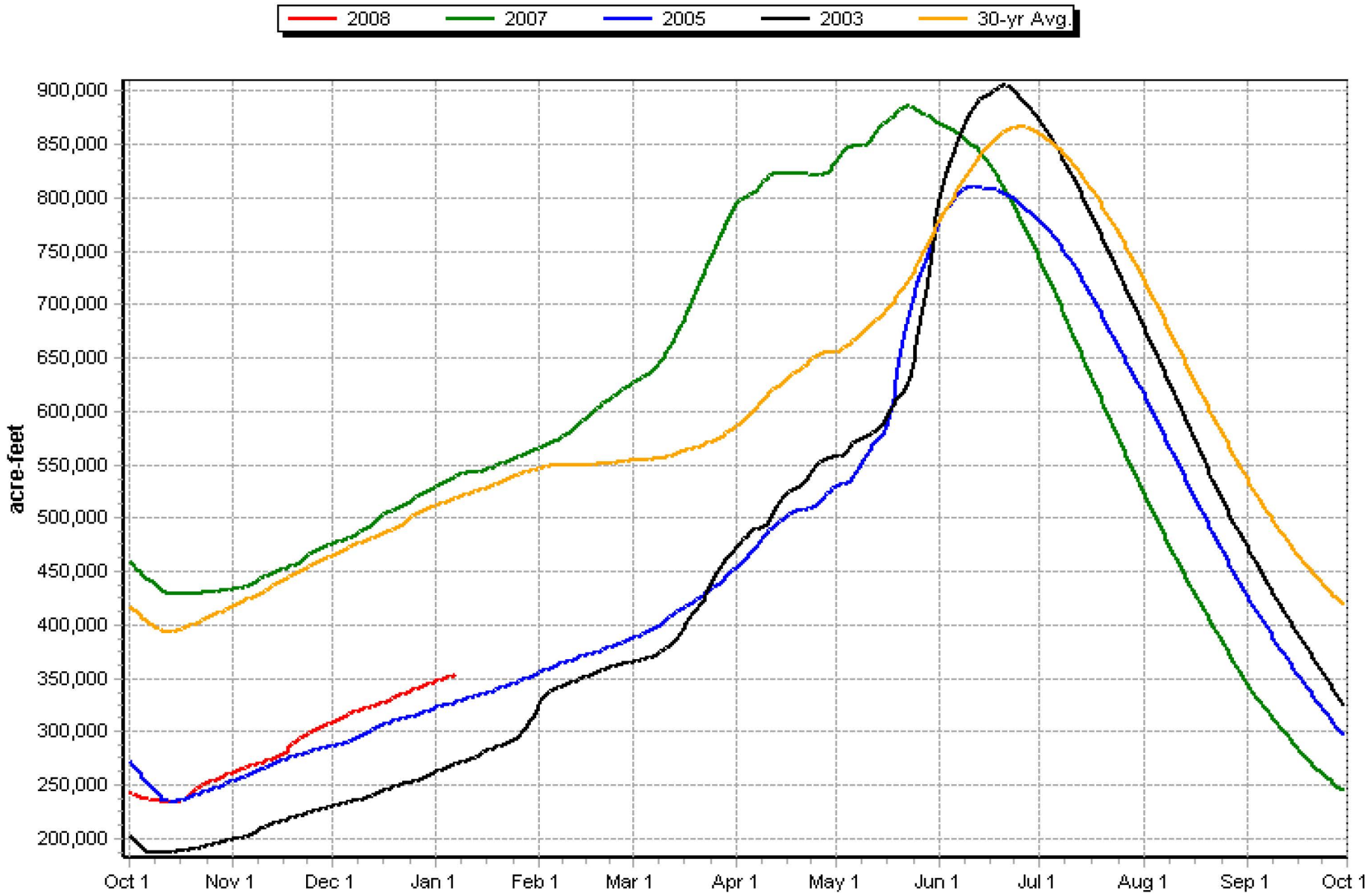
# Idaho Water Supply Committee Meeting

January 15, 2007

U.S. Department of the Interior
Bureau of Reclamation

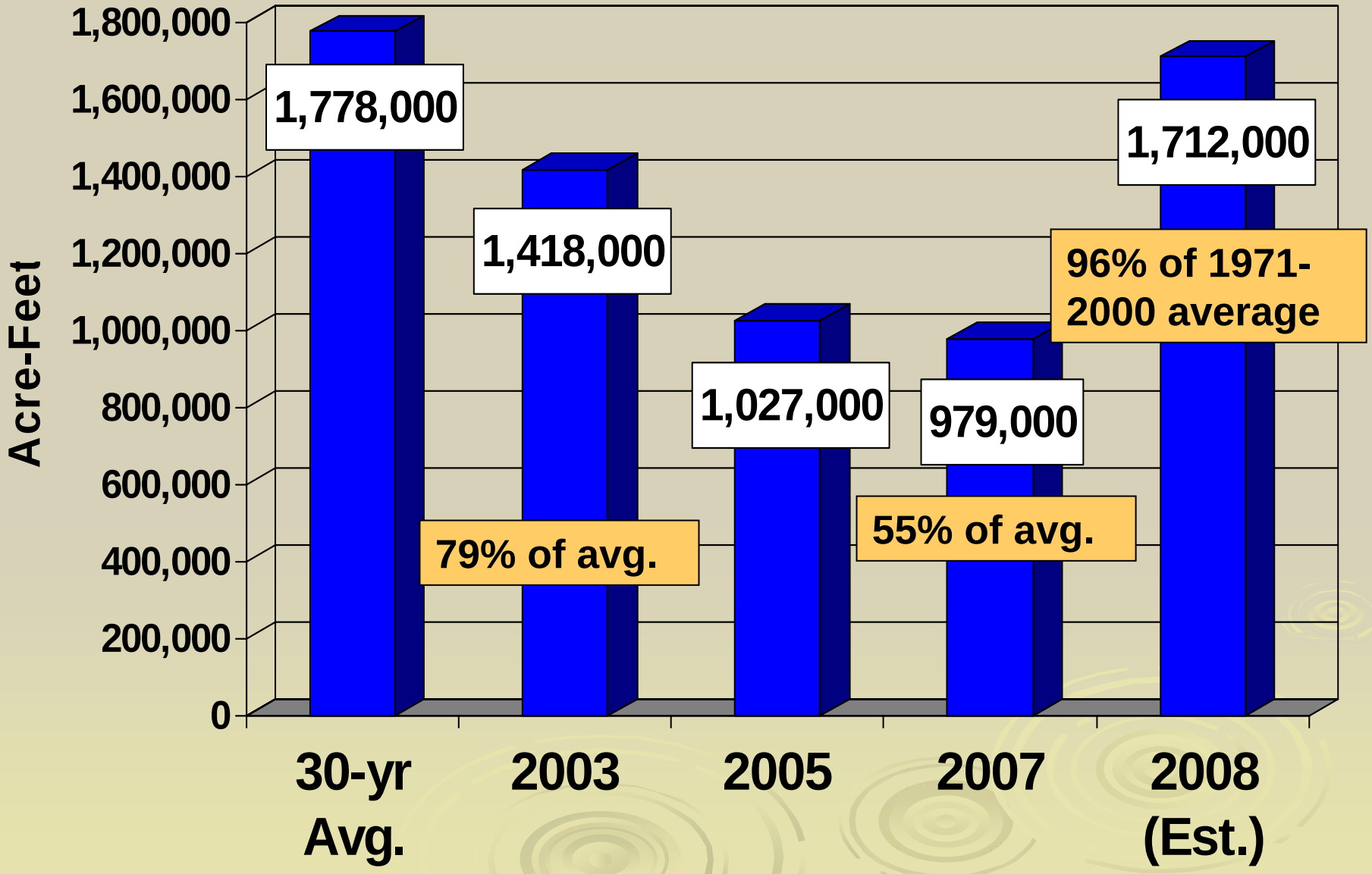

01/14/2008
61% of Payette System Capacity
CSCI 232 cfs
Cascade
420276/646460
65% Full
Deadwood
64820/153992
42% Full
DEDI MISSING
MFPI 156 cfs
PRLI 288 cfs
SQWI 95 cfs
PRPI 1301 cfs
ETNI 0 cfs
HRSI 983 cfs
38% of Boise System Capacity
EMM 1186 cfs
ETSI 0 cfs
PLEI 1221 cfs
PARI 751 cfs
Arrowrock
187120/272200
69% Full
BOMI 318 cfs
BIGI 234 cfs
BTSI 363 cfs
Anderson Ranch
114857/413100
28% Full
BSEI MISSING
LUC 248 cfs
BRFI 176 cfs
Lake Lowell
79658/119400
67% Full
Lucky Peak
61661/264400
23% Full
ANDI 296 cfs

# Boise River Reservoir System Storage
## (capacity = 949,900 acre-ft)



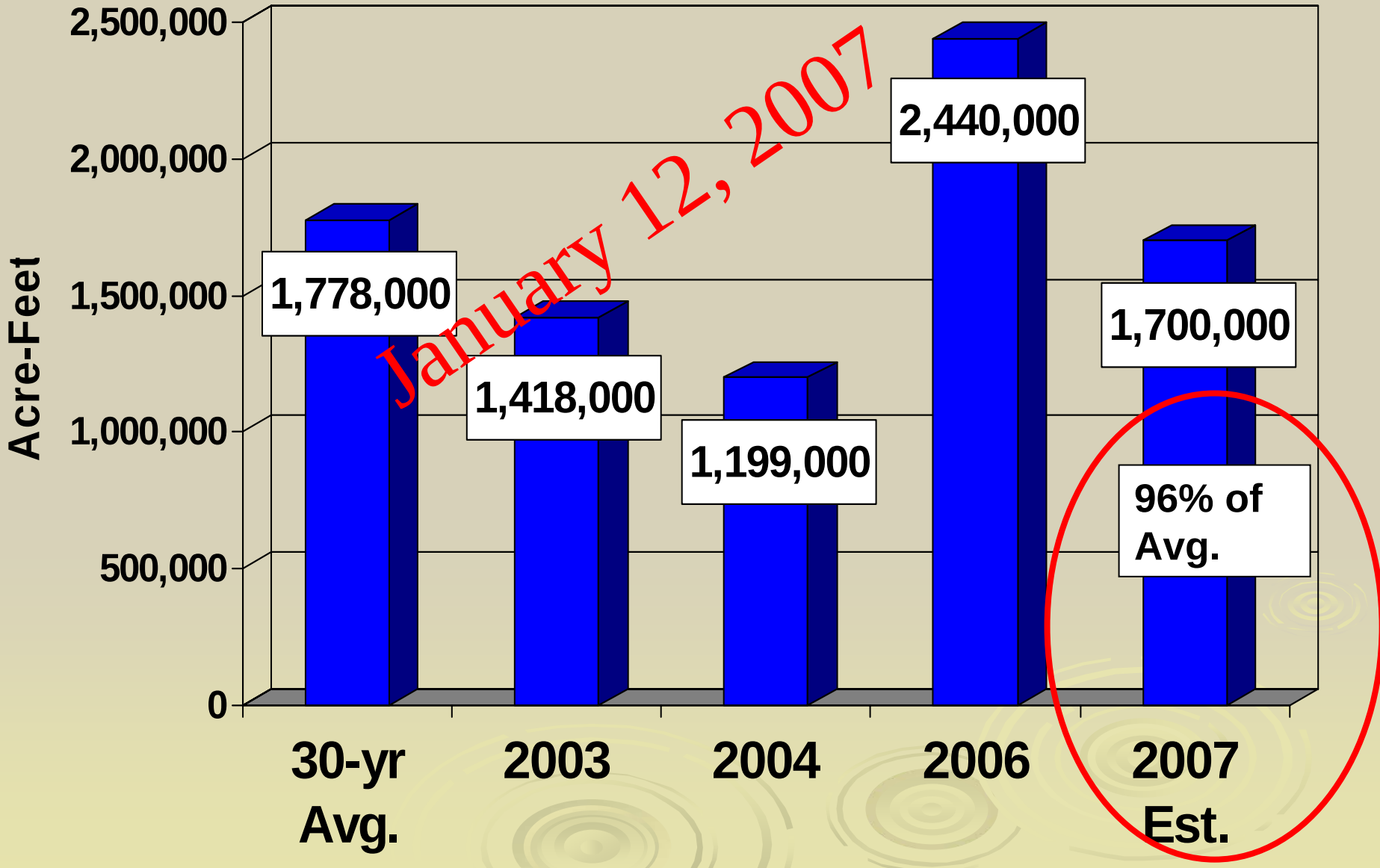
# Boise Basin Runoff

## January-July

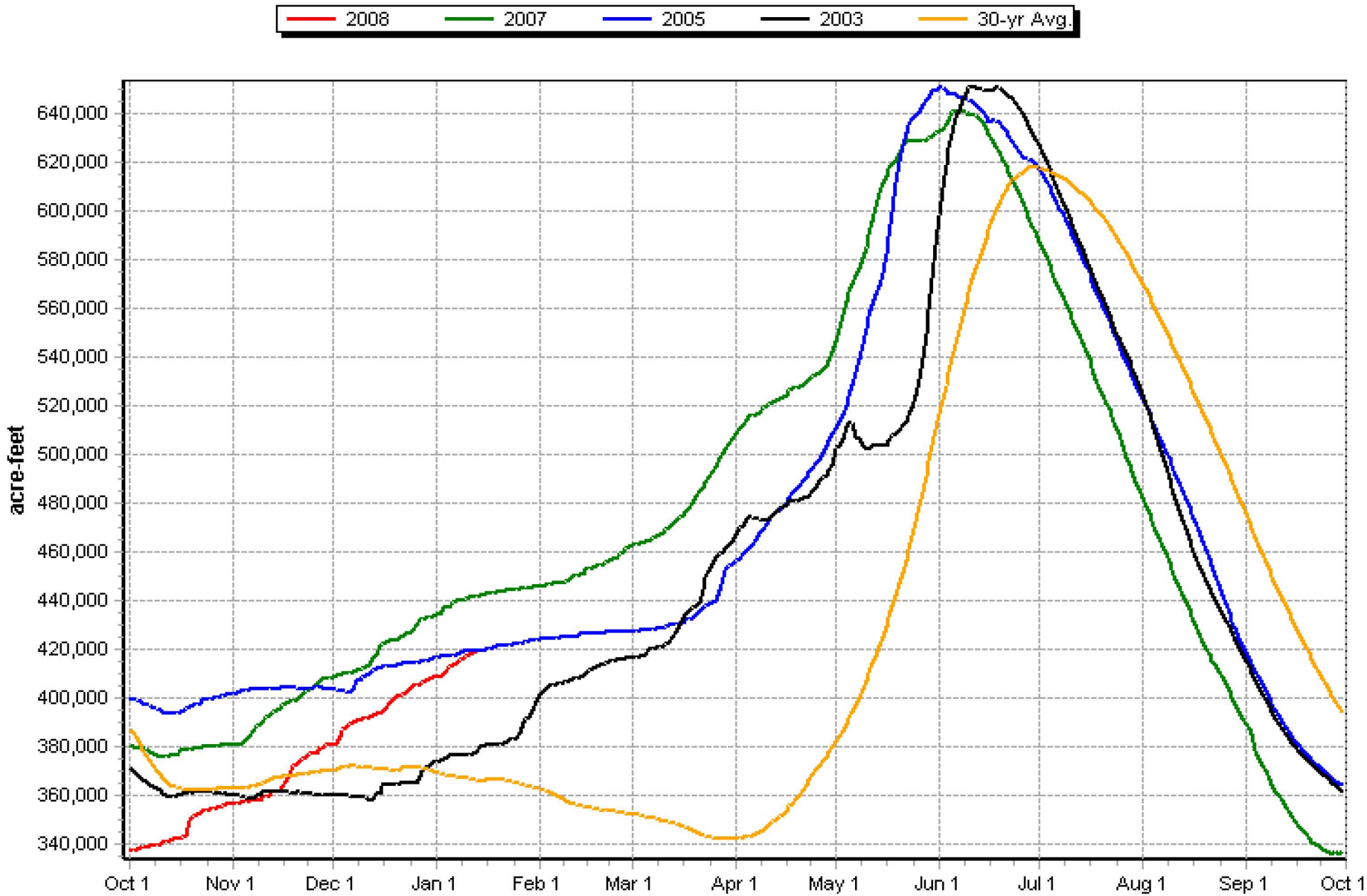


# Boise Basin Runoff

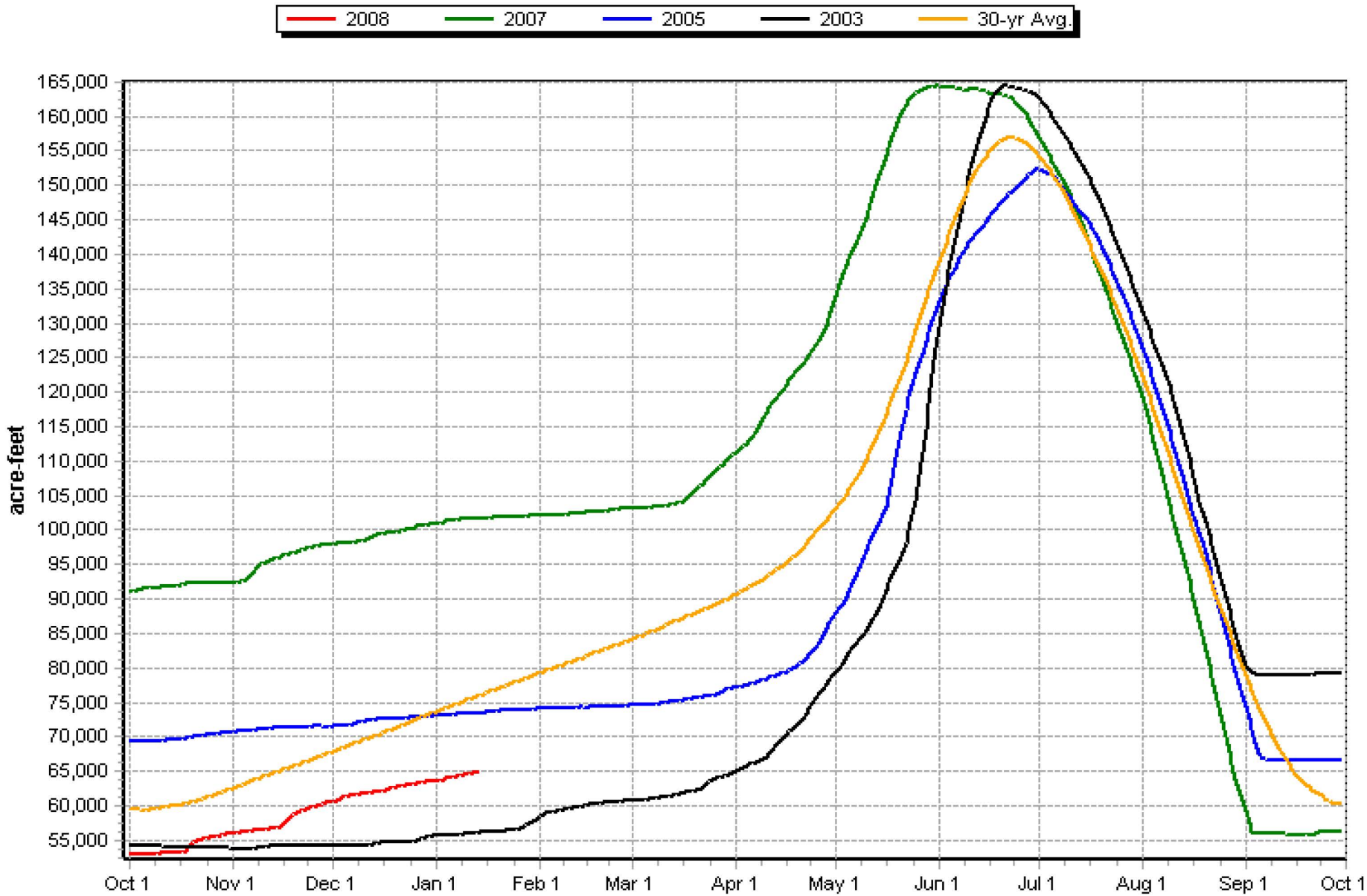
## January 1 – July 30



# Cascade Reservior Storage
# Capacity = 646,460 acre-ft

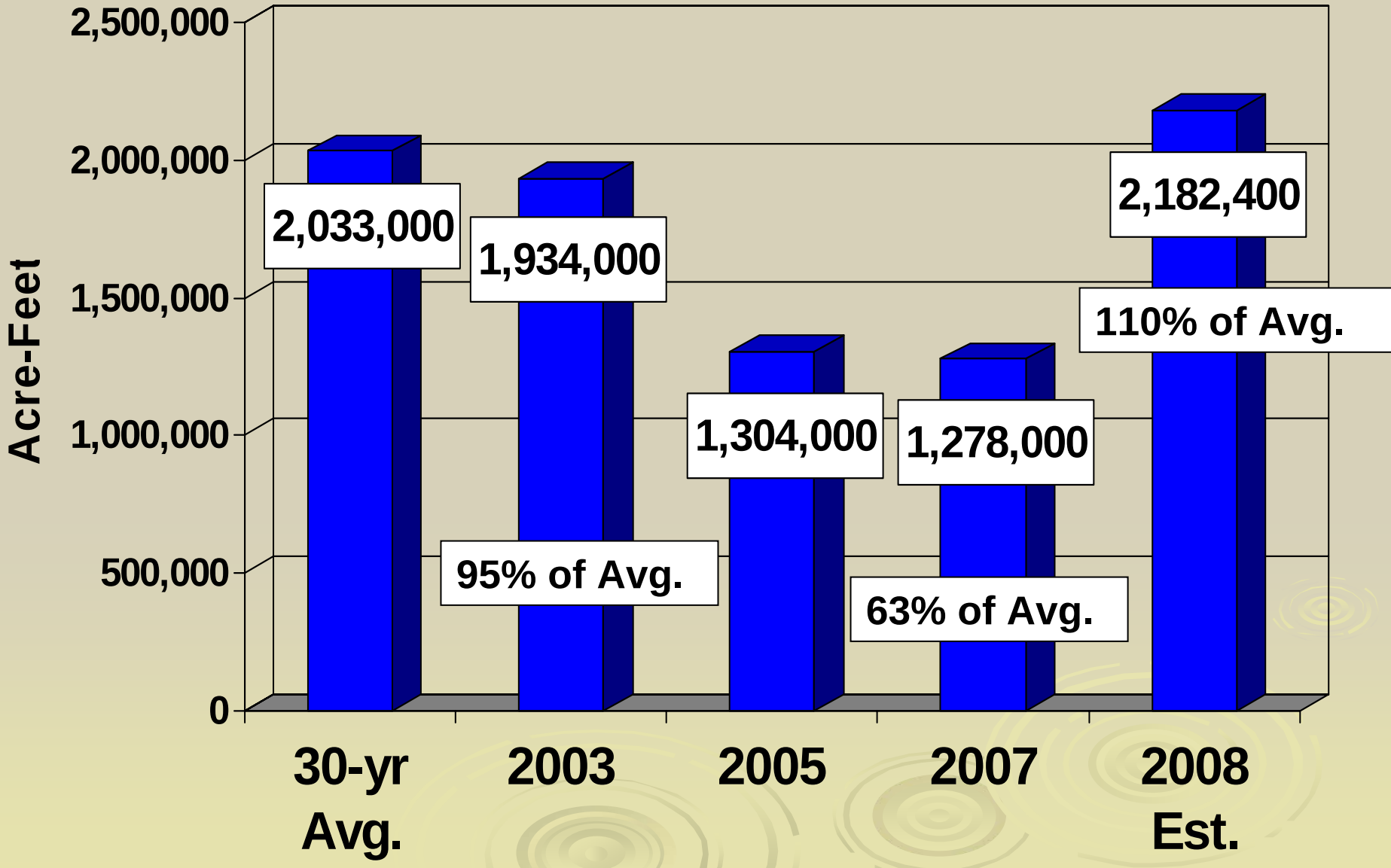


# Deadwood Reservoir Storage
## Capacity = 154,000 acre-ft

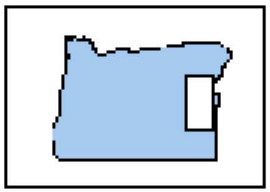


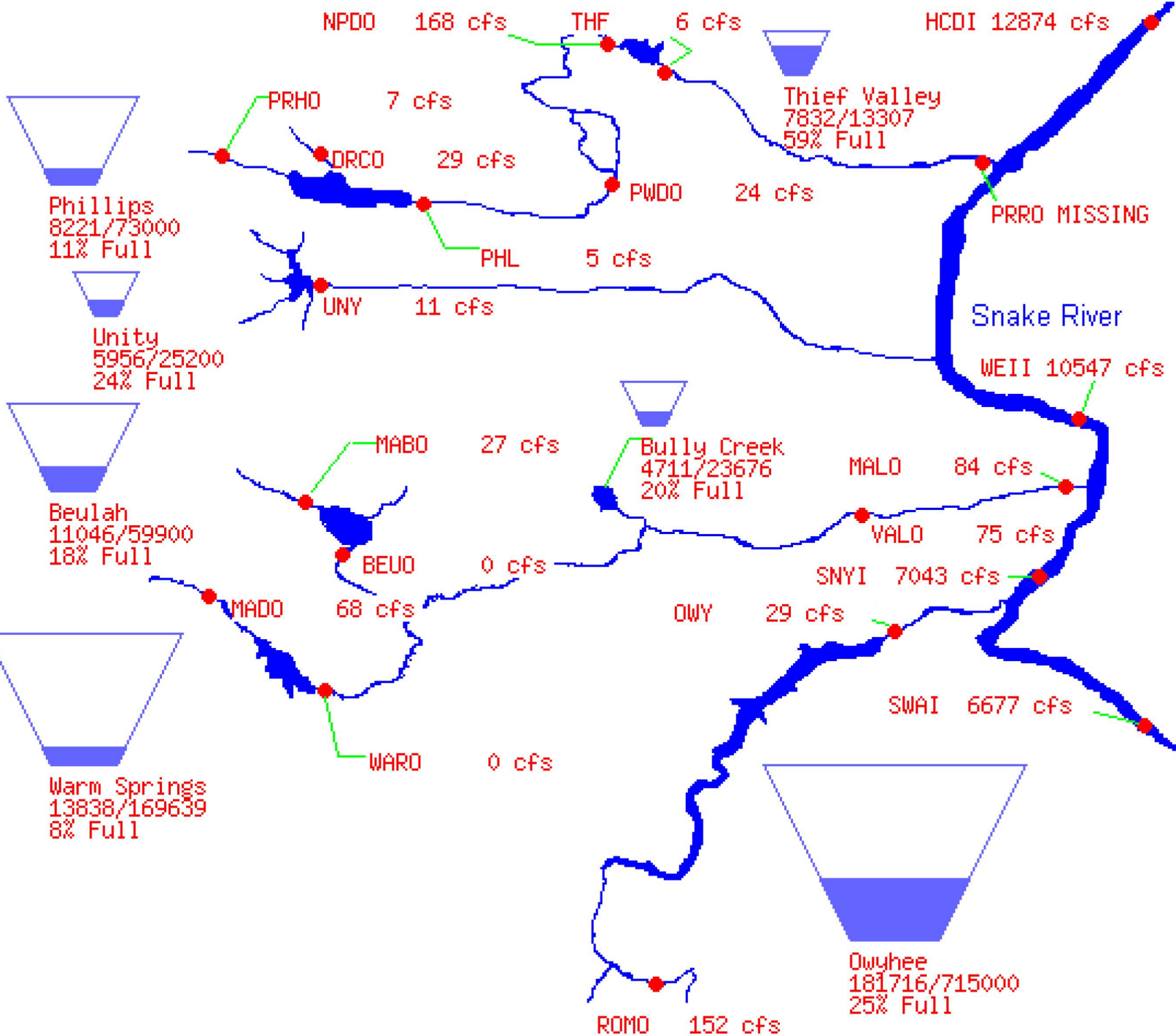
# Payette Basin Runoff

## January –July @ Horseshoe Bend

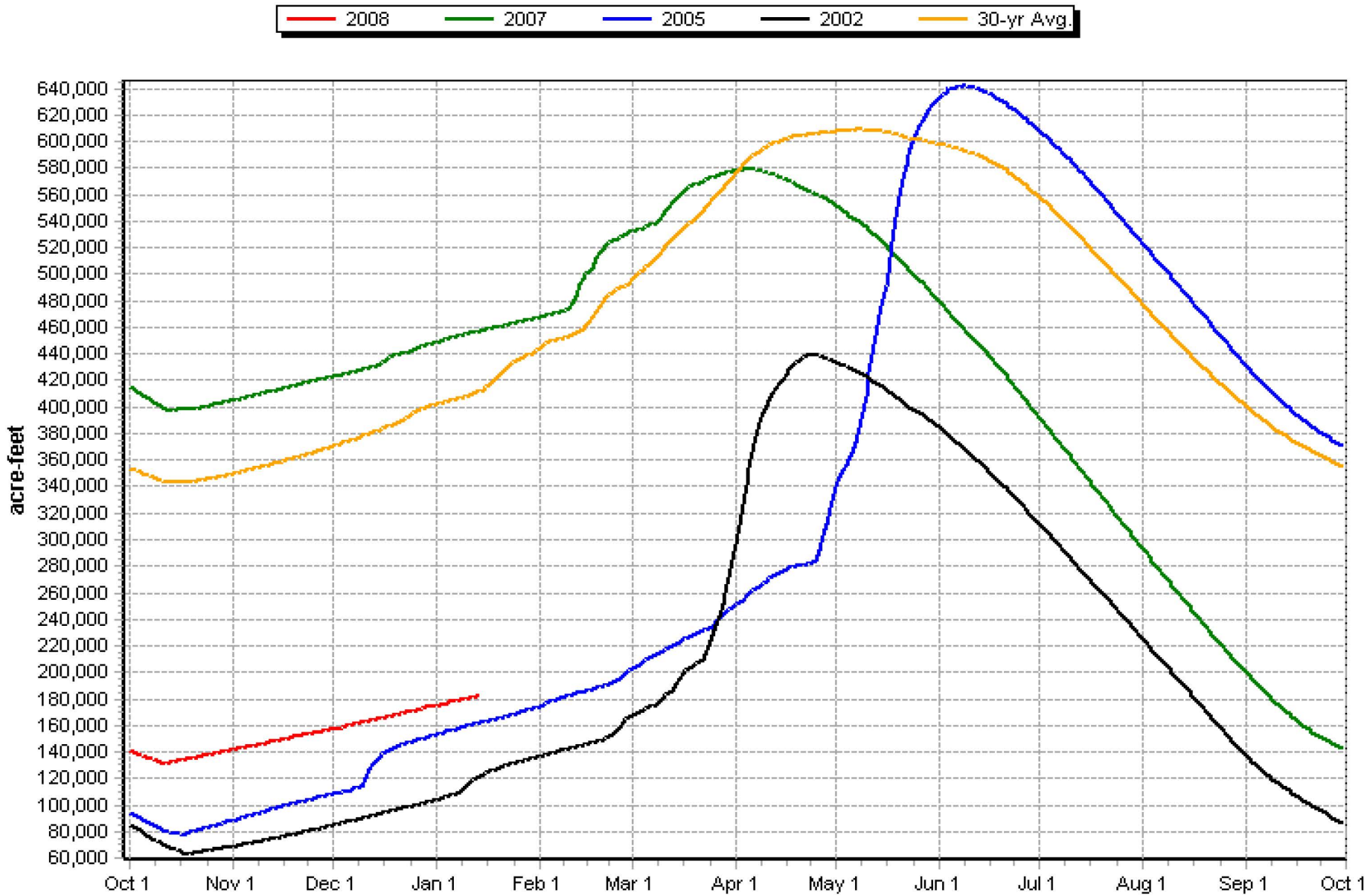


01/13/2008



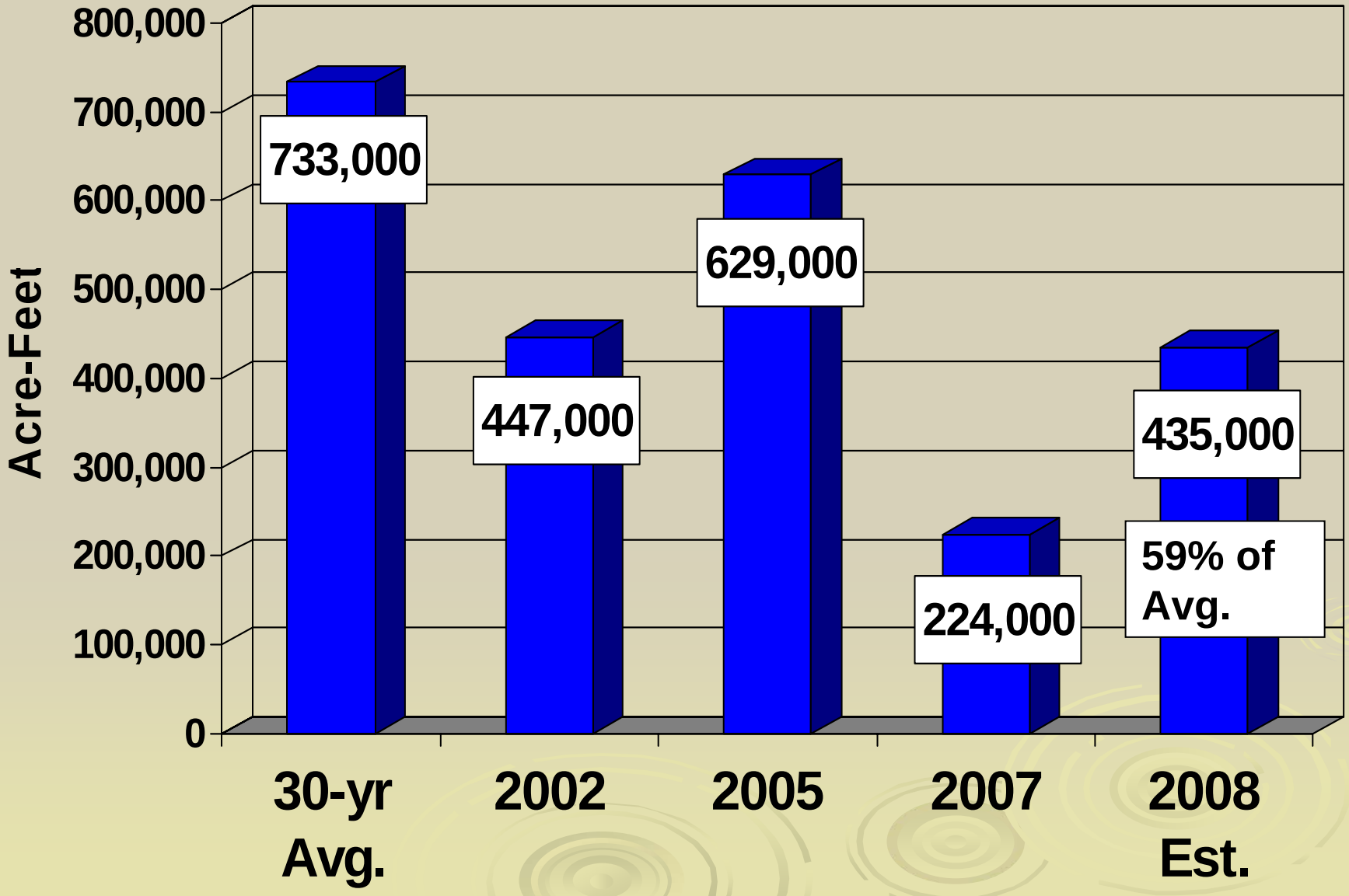

NPDO 168 cfs
THF 6 cfs
HCDI 12874 cfs
Thief Valley
7832/13307
59% Full
PRHO 7 cfs
DRCO 29 cfs
PWDO 24 cfs
PRRO MISSING
Phillips
8221/73000
11% Full
PHL 5 cfs
UNY 11 cfs
Unity
5956/25200
24% Full
Snake River
WEII 10547 cfs
MABO 27 cfs
Bully Creek
4711/23676
20% Full
MALO 84 cfs
Beulah
11046/59900
18% Full
VALO 75 cfs
BEUO 0 cfs
SNYI 7043 cfs
MADO 68 cfs
OWY 29 cfs
SWAI 6677 cfs
WARO 0 cfs
Warm Springs
13838/169639
8% Full
Owyhee
181716/715000
25% Full
ROMO 152 cfs

# Owyhee Reservoir Storage
## Capacity = 715,000 AF



# Owyhee Basin Runoff

## January -June



RECLAMATION

*Managing Water in the West*

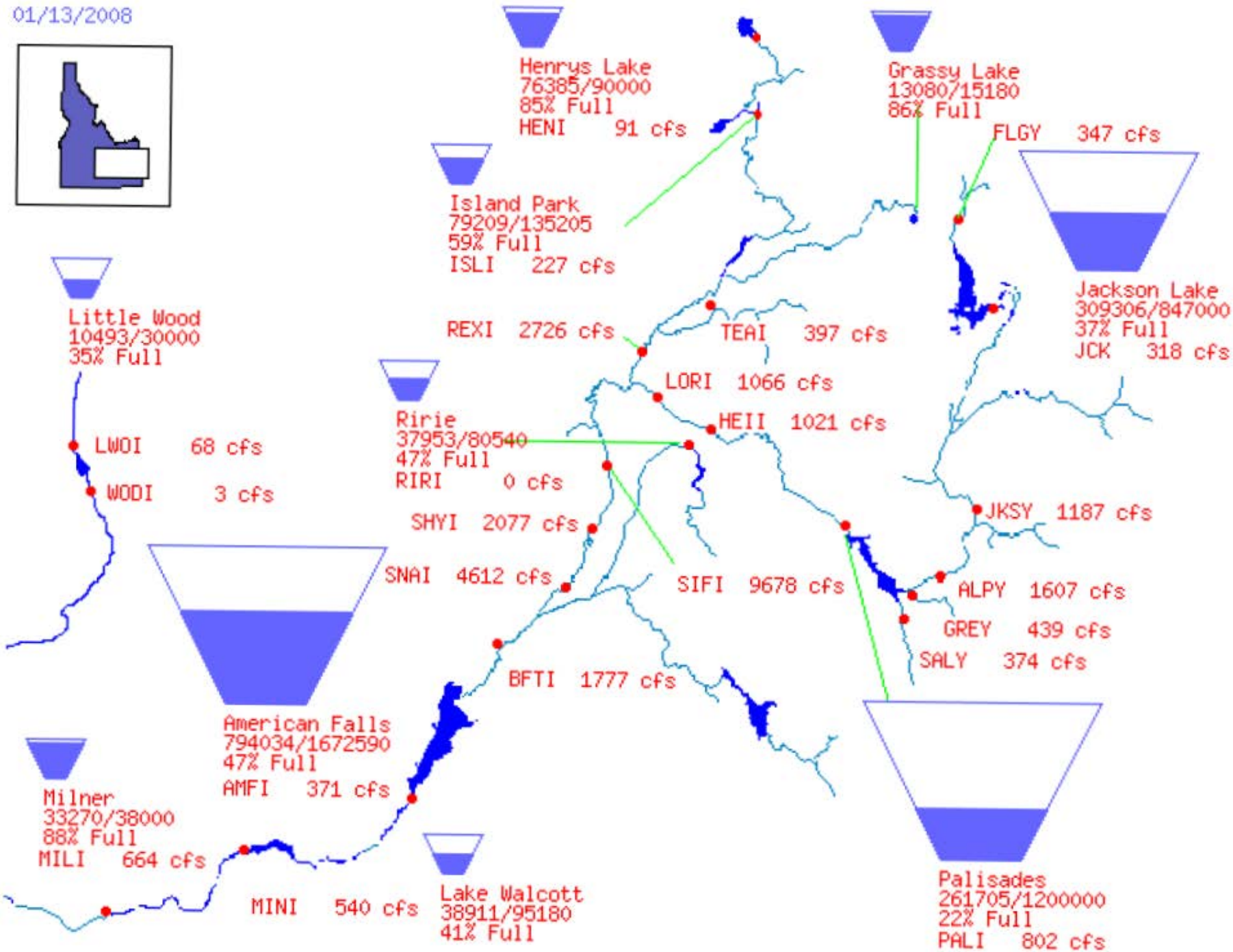
# Upper Snake Reservoir Operations for Water Supply Committee

**January 15, 2008**

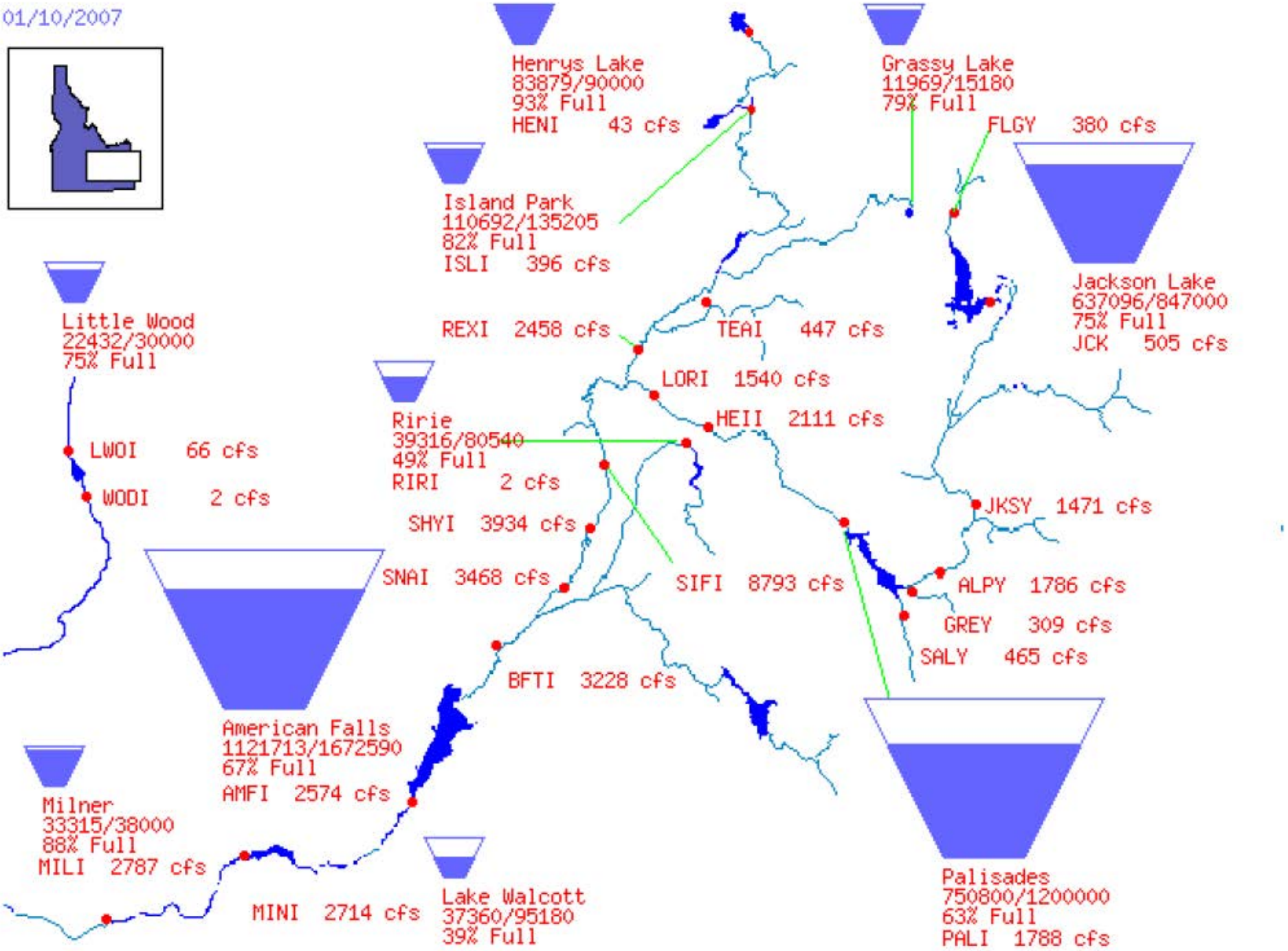
**Mike Beus, Water Operations Manager**
**Snake River Area Office**

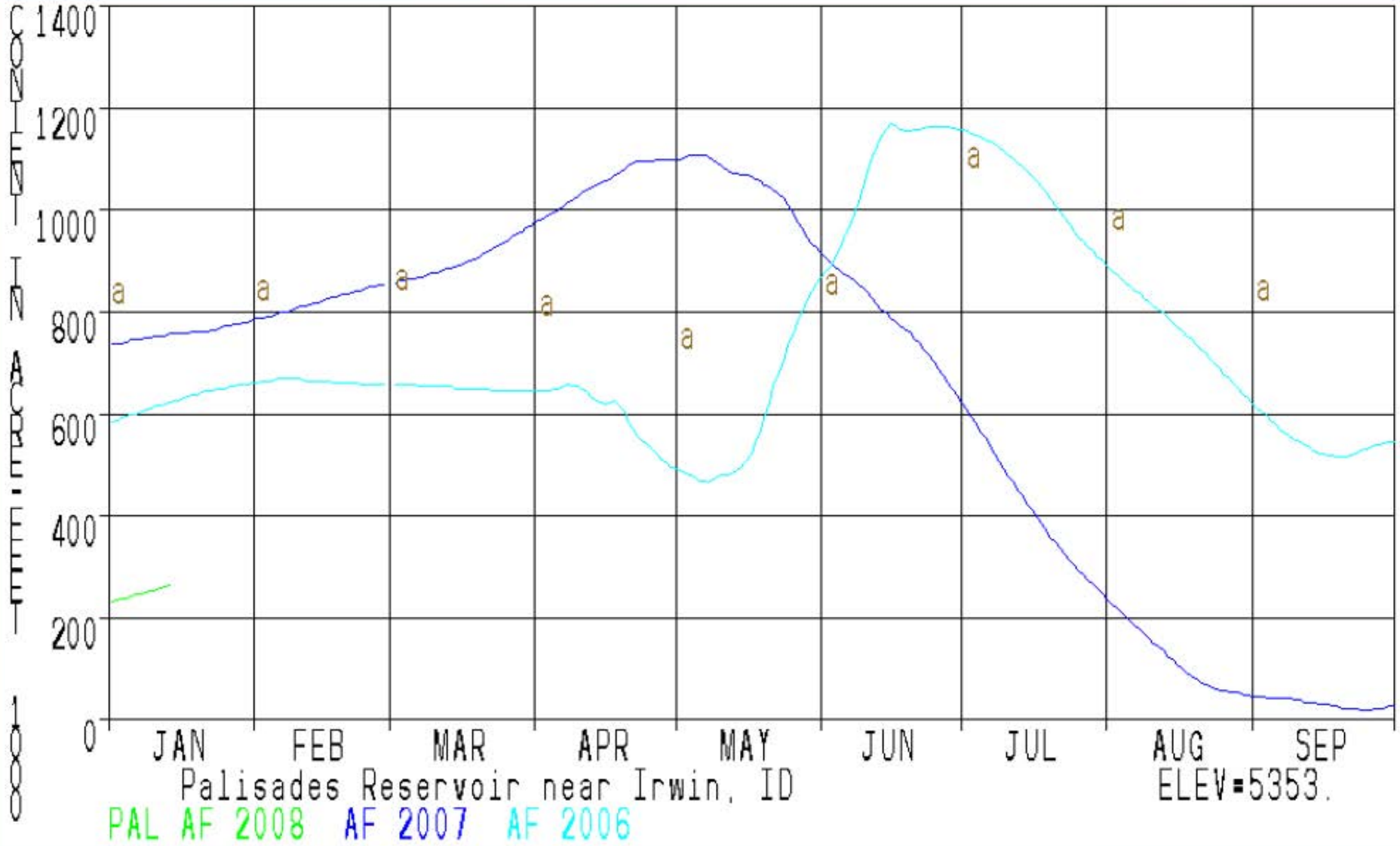
U.S. Department of the Interior
Bureau of Reclamation

01/13/2008

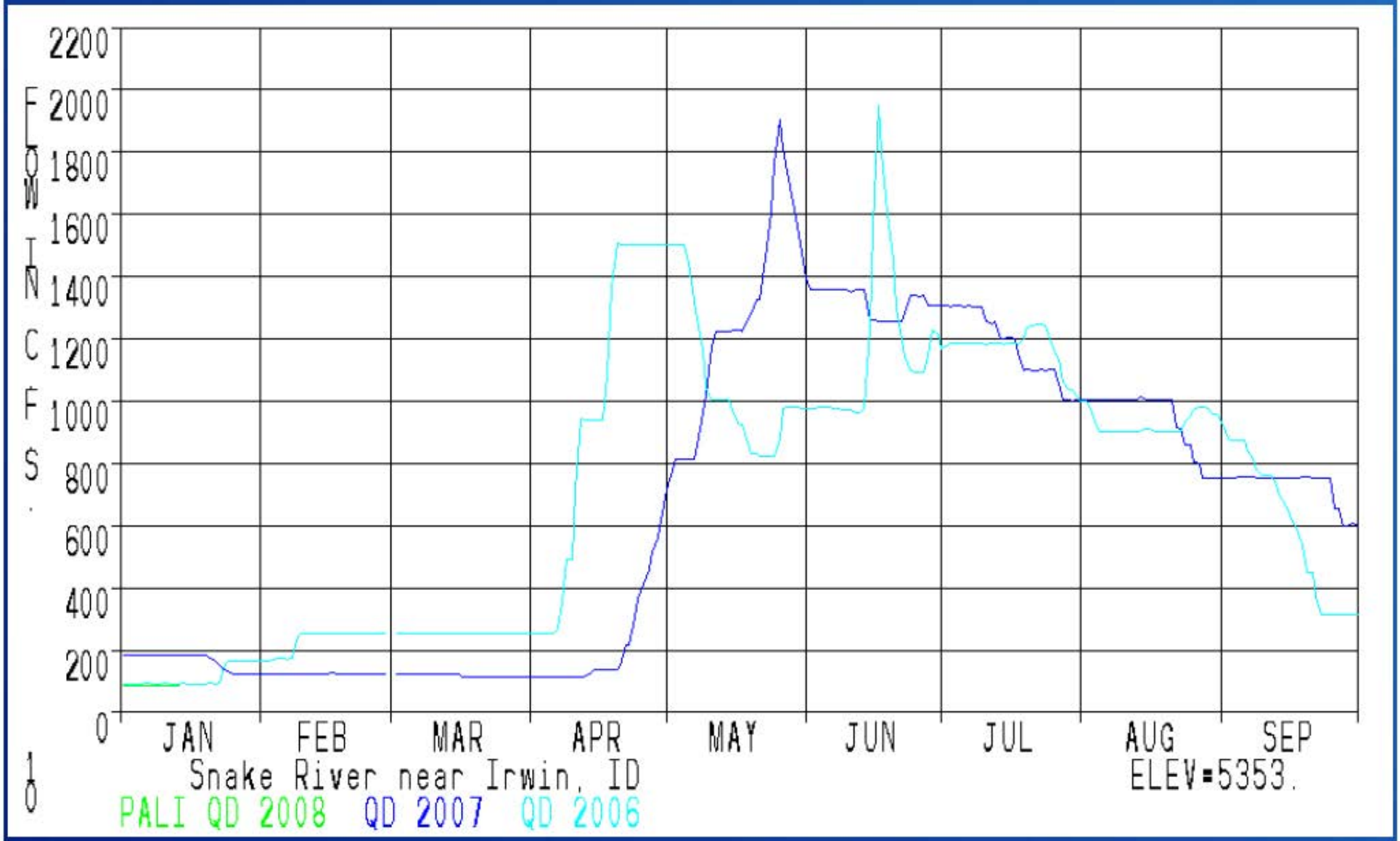

Henrys Lake
76385/90000
85% Full
HENI 91 cfs
Grassy Lake
13080/15180
86% Full
FLGY 347 cfs
Island Park
79209/135205
59% Full
ISLI 227 cfs
Jackson Lake
309306/847000
37% Full
JCK 318 cfs
Little Wood
10493/30000
35% Full
REXI 2726 cfs
TEAI 397 cfs
LORI 1066 cfs
HEII 1021 cfs
Ririe
37953/80540
47% Full
RIRI 0 cfs
LWOI 68 cfs
WODI 3 cfs
SHYI 2077 cfs
JKSY 1187 cfs
SNAI 4612 cfs
SIFI 9678 cfs
ALPY 1607 cfs
GREY 439 cfs
SALY 374 cfs
BFTI 1777 cfs
American Falls
794034/1672590
47% Full
AMFI 371 cfs
Milner
33270/38000
88% Full
MILI 664 cfs
MINI 540 cfs
Lake Walcott
38911/95180
41% Full
Palisades
261705/1200000
22% Full
PALI 802 cfs

01/10/2007


Henrys Lake
83879/90000
93% Full
HENI 43 cfs
Grassy Lake
11969/15180
79% Full
FLGY 380 cfs
Island Park
110692/135205
82% Full
ISLI 396 cfs
Jackson Lake
637096/847000
75% Full
JCK 505 cfs
Little Wood
22432/30000
75% Full
REXI 2458 cfs
TEAI 447 cfs
LORI 1540 cfs
HEII 2111 cfs
Ririe
39316/80540
49% Full
RIRI 2 cfs
LWOI 66 cfs
WODI 2 cfs
SHYI 3934 cfs
JKSY 1471 cfs
SNAI 3468 cfs
SIFI 8793 cfs
ALPY 1786 cfs
GREY 309 cfs
SALY 465 cfs
BFTI 3228 cfs
American Falls
1121713/1672590
67% Full
AMFI 2574 cfs
Milner
33315/38000
88% Full
MILI 2787 cfs
MINI 2714 cfs
Lake Walcott
37360/95180
39% Full
Palisades
750800/1200000
63% Full
PALI 1788 cfs

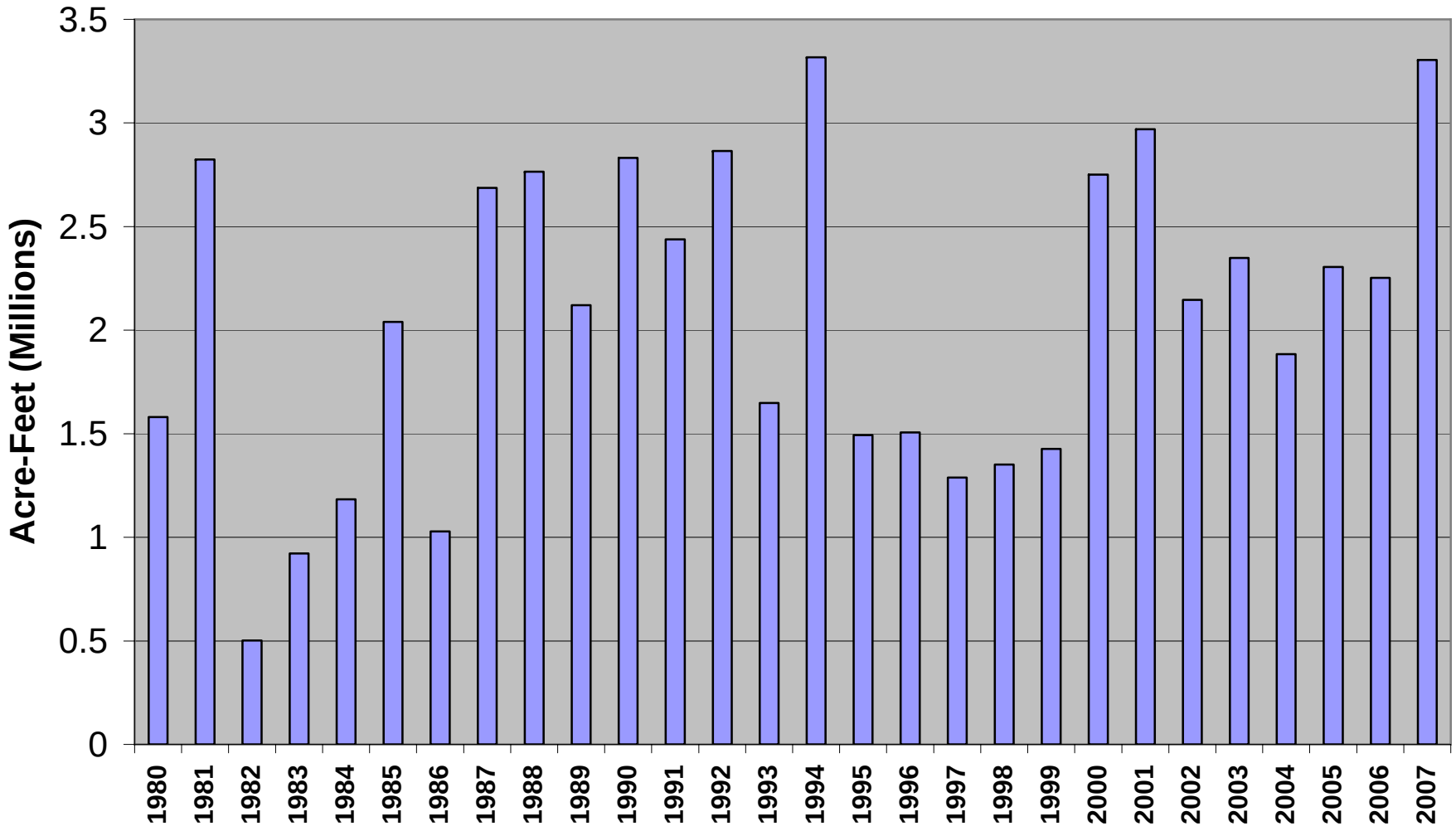



RECLAMATION

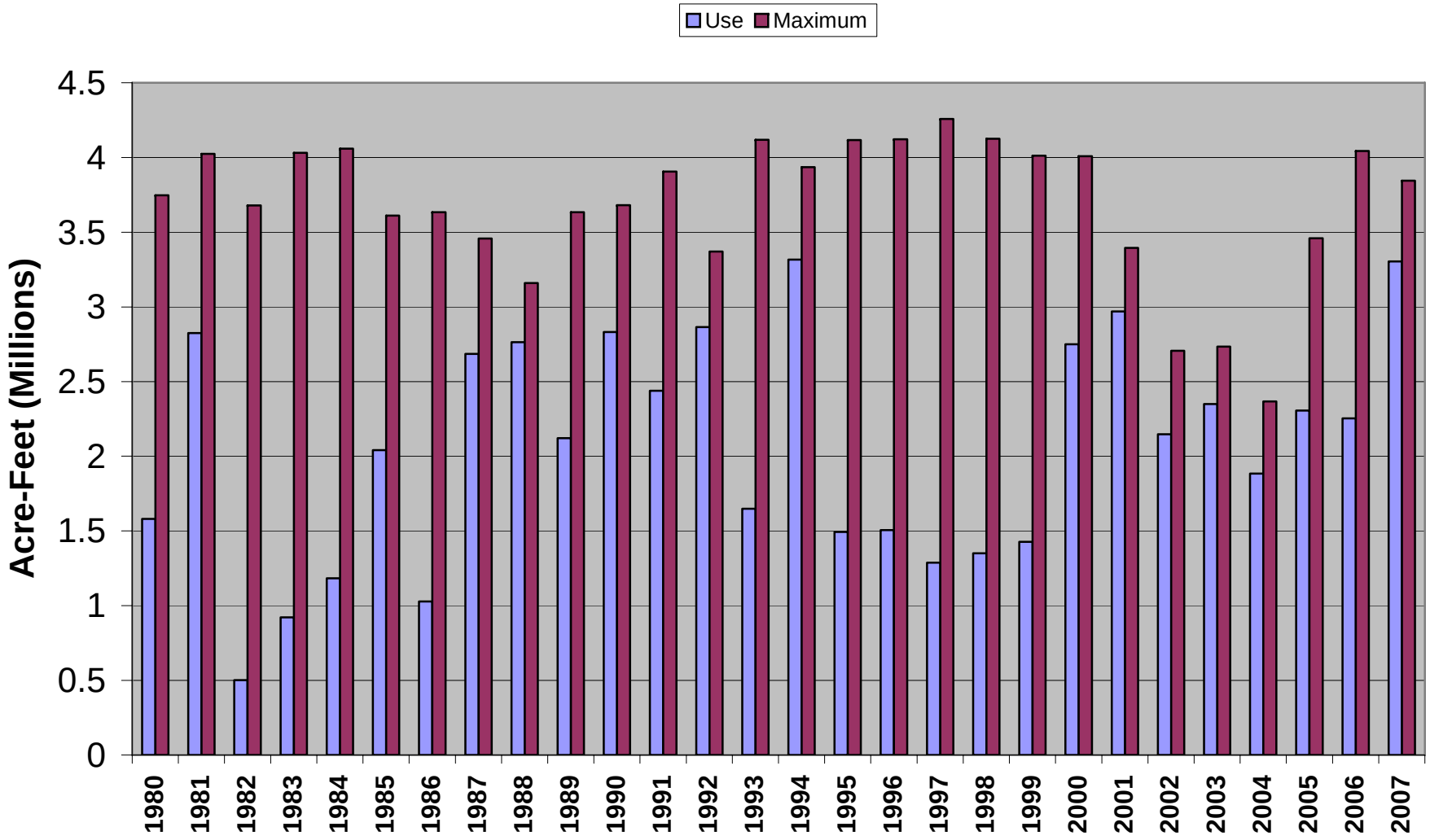



RECLAMATION

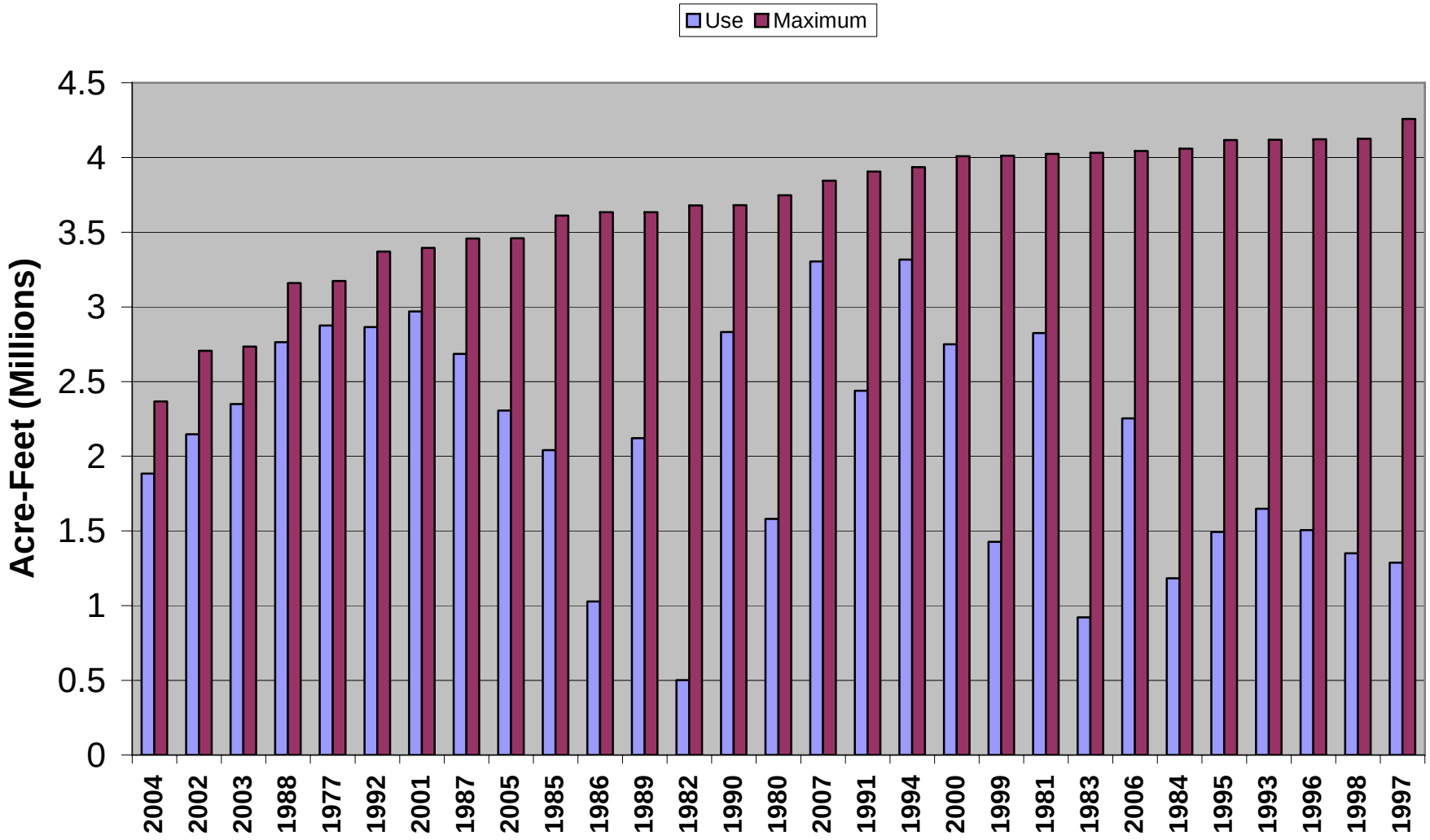
# Stored Water Use above Milner

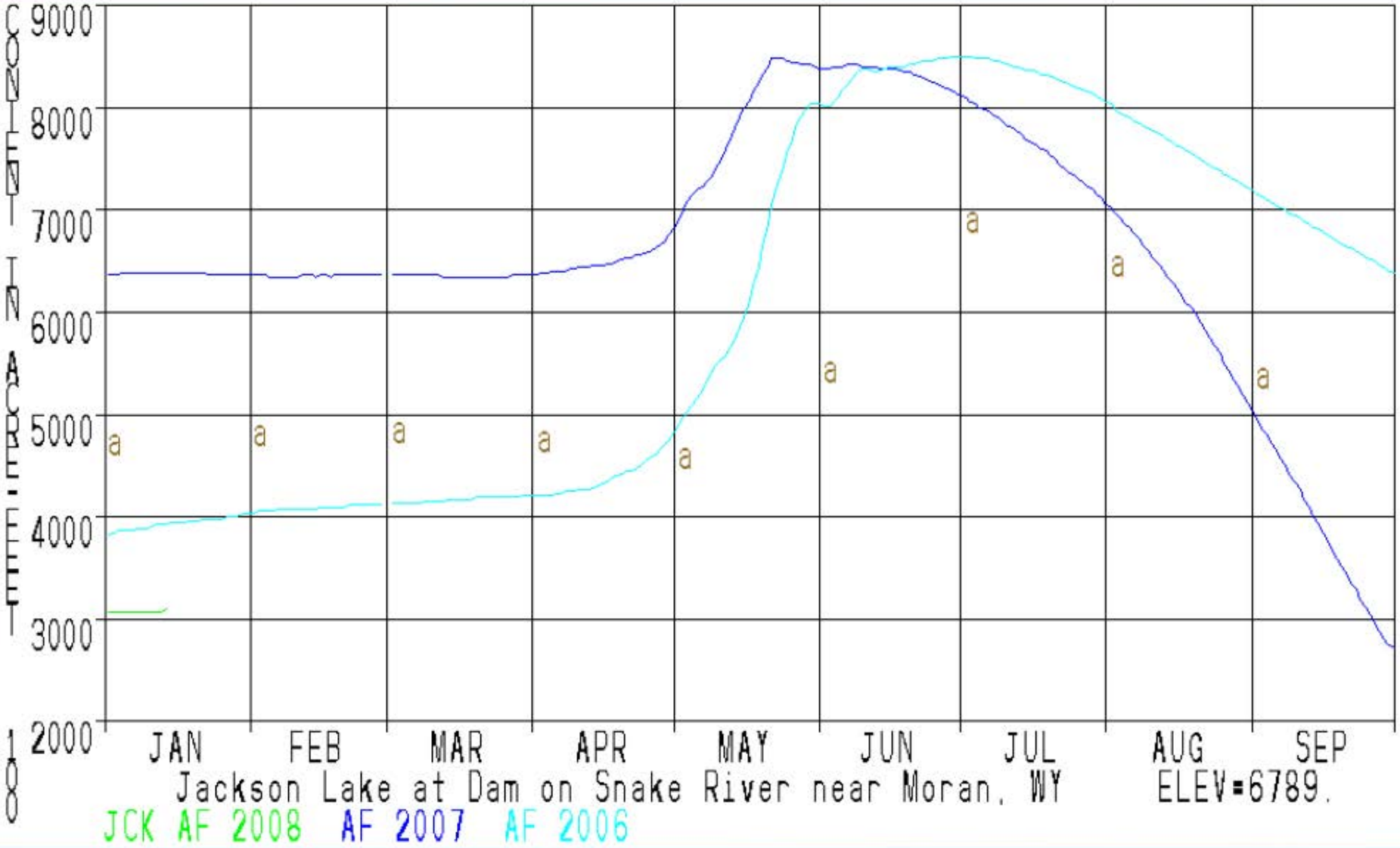


# Stored Water above Milner

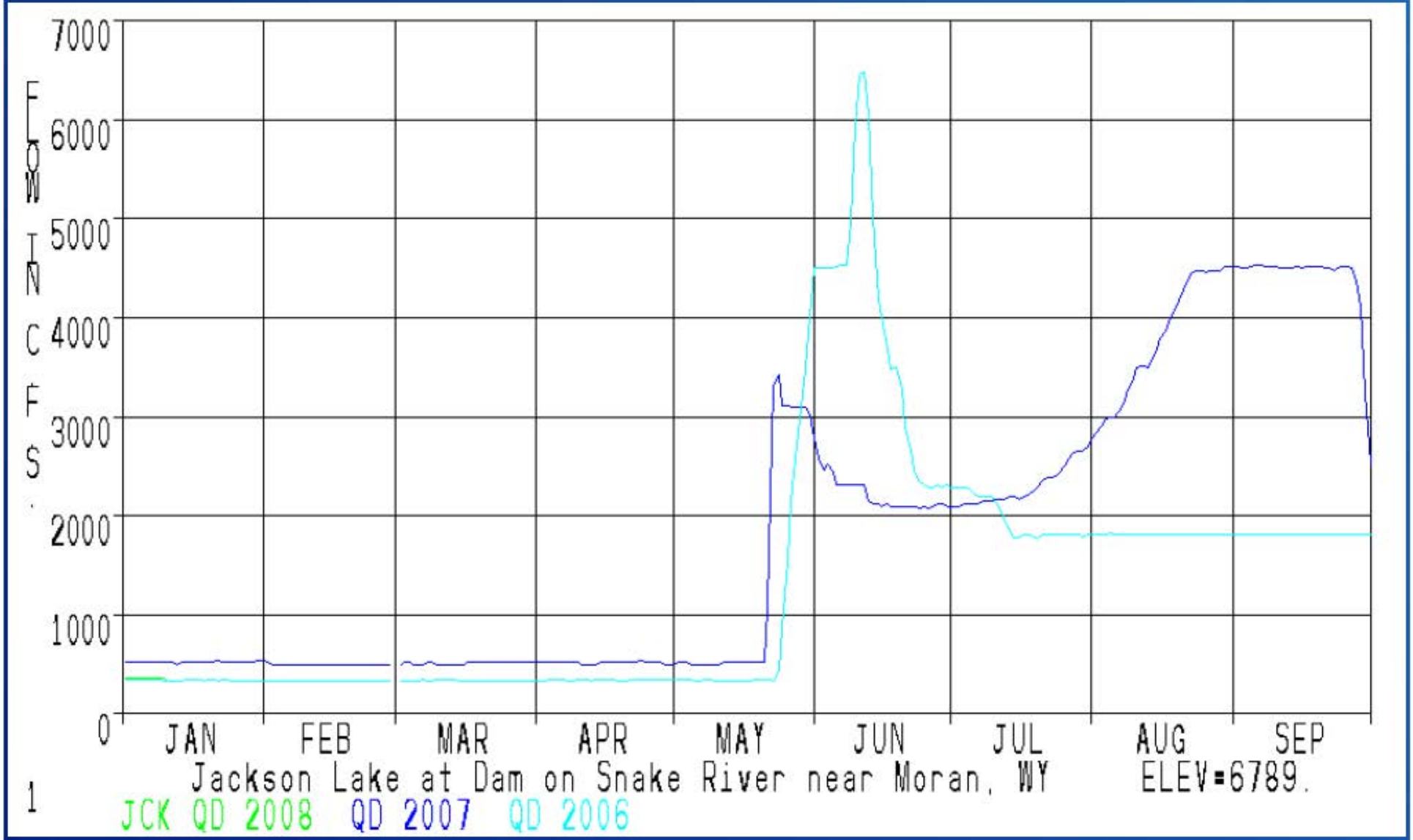


# Stored Water above Milner

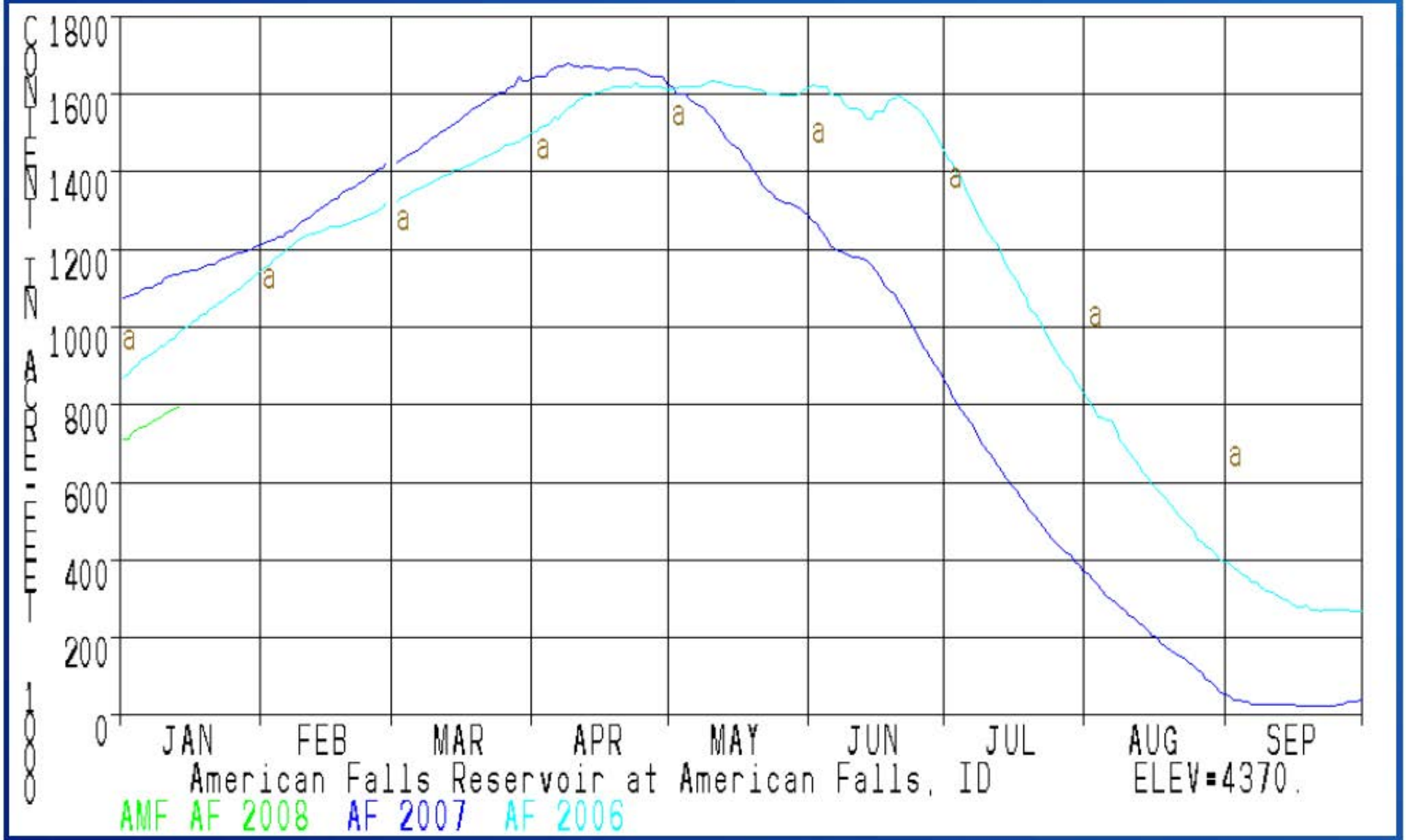




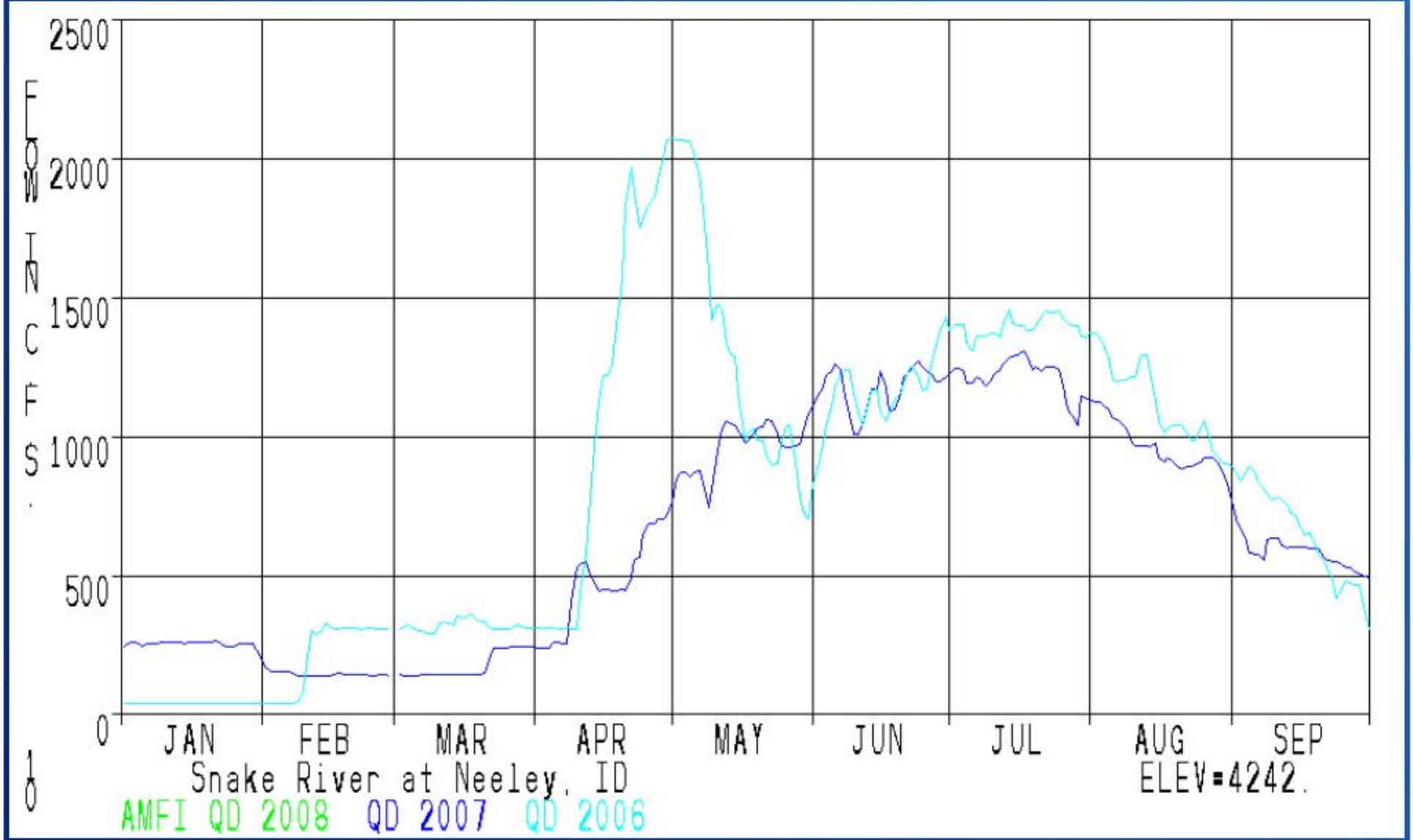

RECLAMATION




RECLAMATION

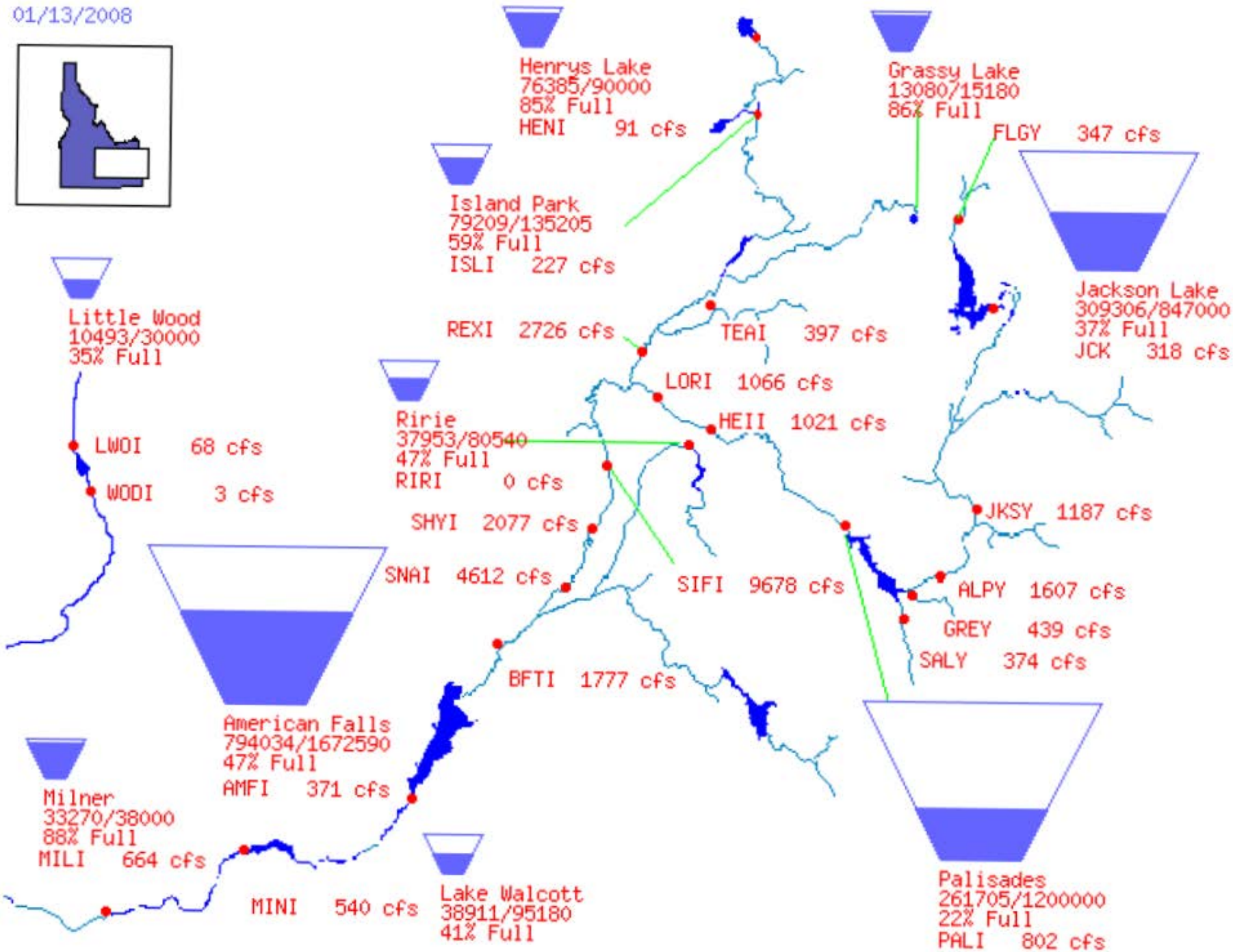



RECLAMATION




RECLAMATION

01/13/2008


Henrys Lake
76385/90000
85% Full
HENI 91 cfs
Grassy Lake
13080/15180
86% Full
FLGY 347 cfs
Island Park
79209/135205
59% Full
ISLI 227 cfs
Jackson Lake
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JCK 318 cfs
Little Wood
10493/30000
35% Full
REXI 2726 cfs
TEAI 397 cfs
LORI 1066 cfs
HEII 1021 cfs
Ririe
37953/80540
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WODI 3 cfs
SHYI 2077 cfs
JKSY 1187 cfs
SNAI 4612 cfs
SIFI 9678 cfs
ALPY 1607 cfs
GREY 439 cfs
SALY 374 cfs
BFTI 1777 cfs
American Falls
794034/1672590
47% Full
AMFI 371 cfs
Milner
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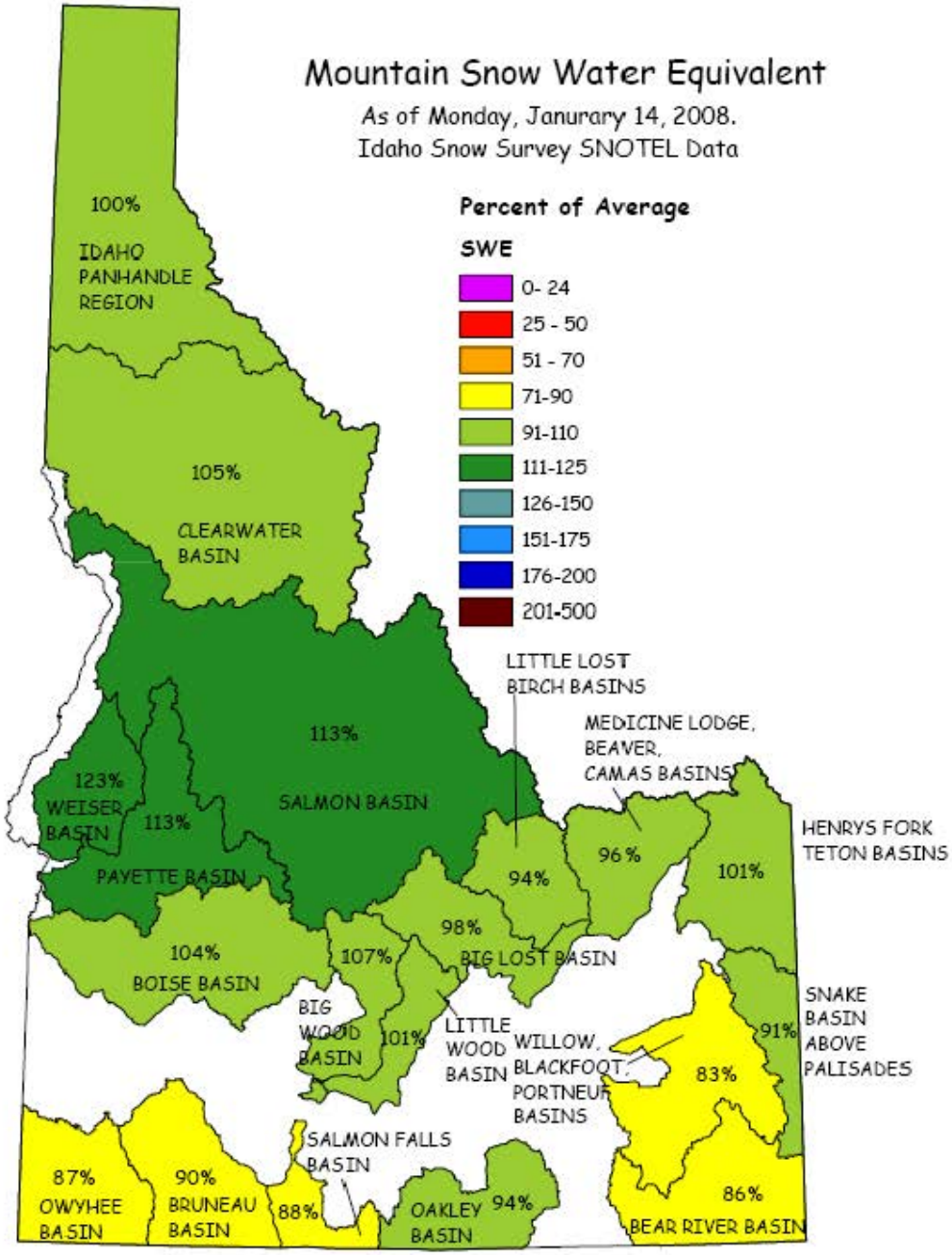
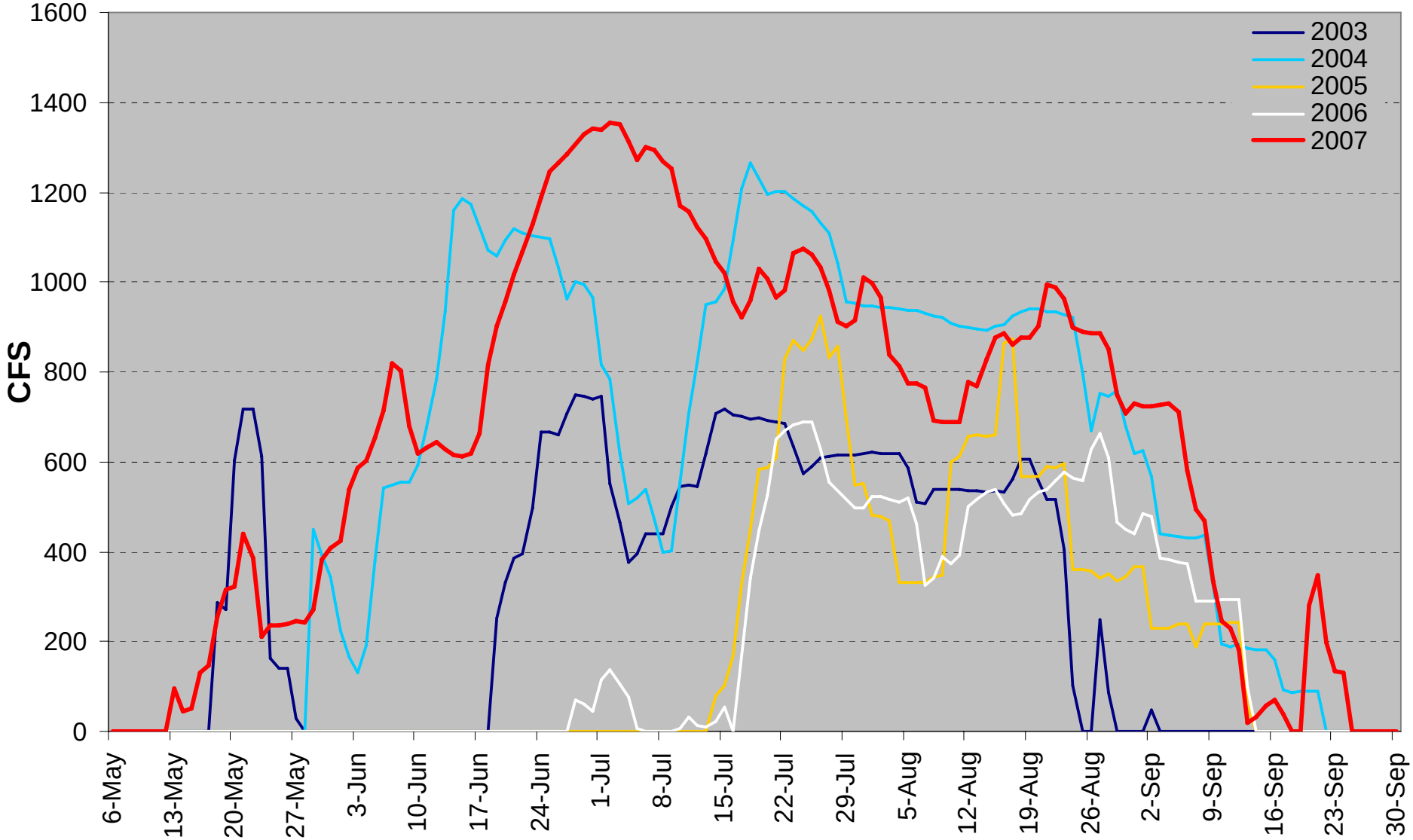
88% Full
MILI 664 cfs
MINI 540 cfs
Lake Walcott
38911/95180
41% Full
Palisades
261705/1200000
22% Full
PALI 802 cfs

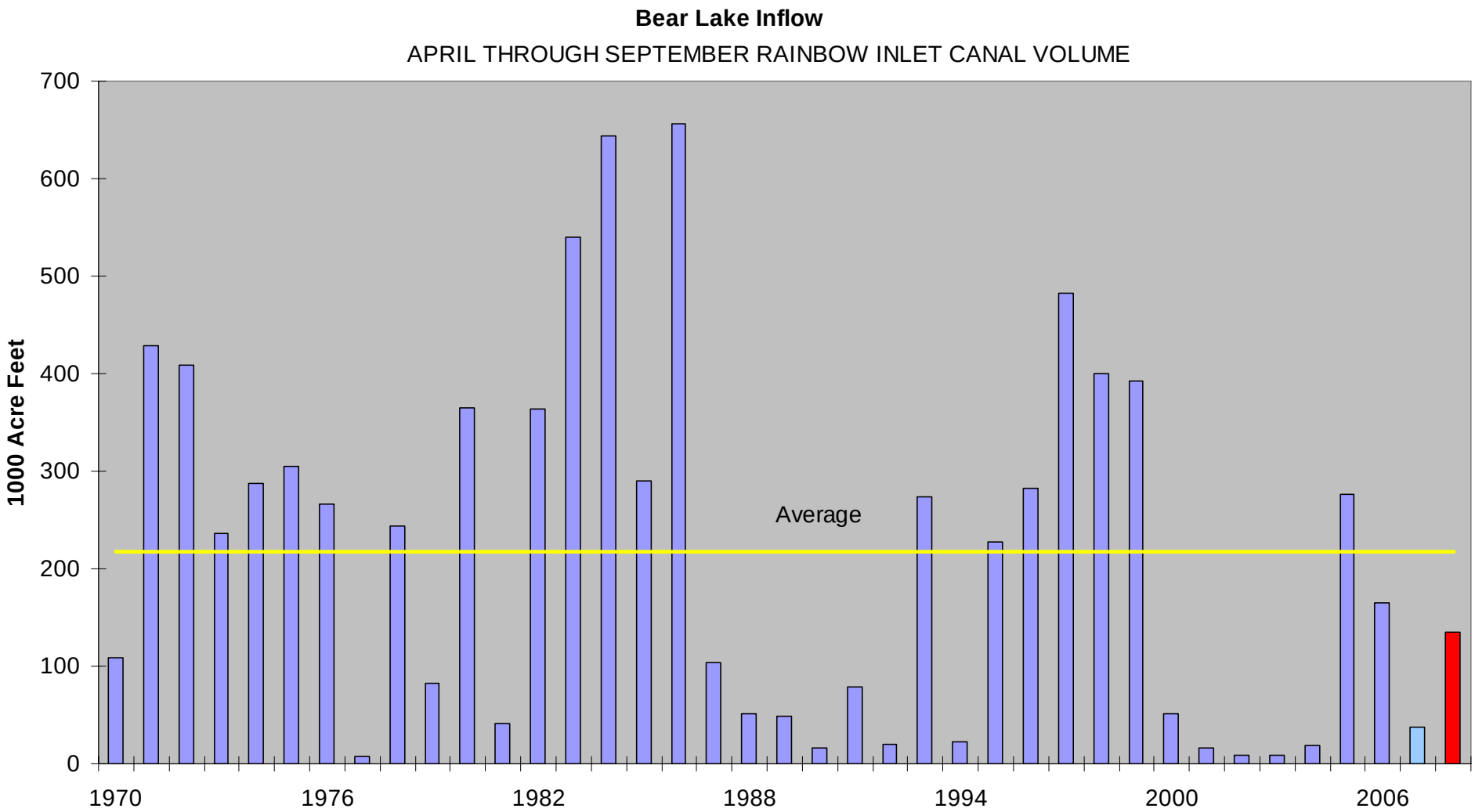
# January 2008
# Water Supply Committee

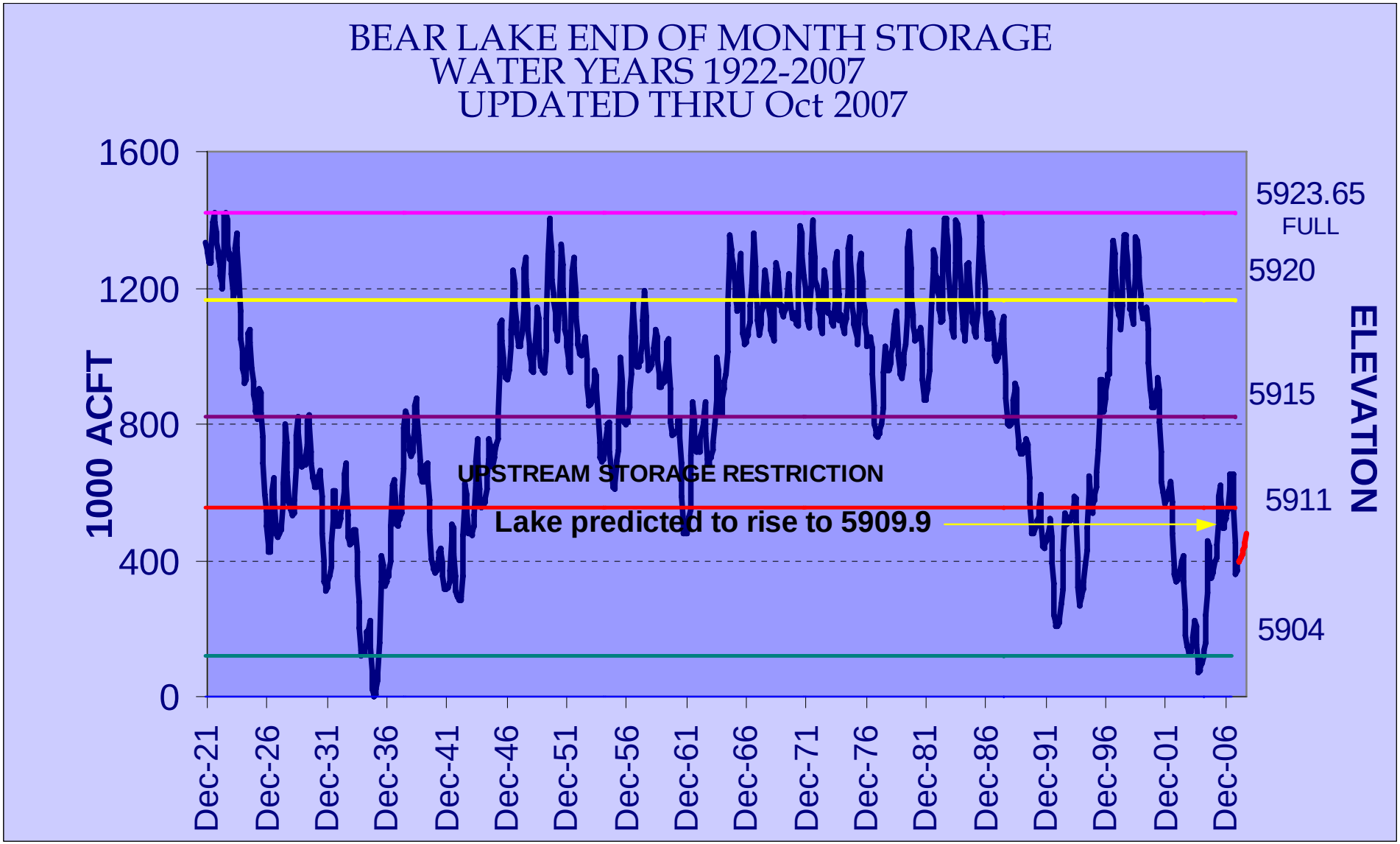

Mountain Snow Water Equivalent
As of Monday, Janurary 14, 2008.
Idaho Snow Survey SNOTEL Data
Percent of Average
SWE
0- 24
25 - 50
51 - 70
71-90
91-110
111-125
126-150
151-175
176-200
201-500
100%
IDAHO PANHANDLE REGION
105%
CLEARWATER BASIN
113%
SALMON BASIN
123%
WEISER BASIN
113%
PAYETTE BASIN
104%
BOISE BASIN
107%
BIG WOOD BASIN
101%
LITTLE WOOD BASIN
98%
BIG LOST BASIN
94%
LITTLE LOST BIRCH BASINS
96%
MEDICINE LODGE, BEAVER, CAMAS BASINS
101%
HENRYS FORK TETON BASINS
91%
SNAKE BASIN ABOVE PALISADES
83%
WILLOW, BLACKFOOT, PORTNEUF BASINS
86%
BEAR RIVER BASIN
87%
OWYHEE BASIN
90%
BRUNEAU BASIN
88%
SALMON FALLS BASIN
94%
OAKLEY BASIN

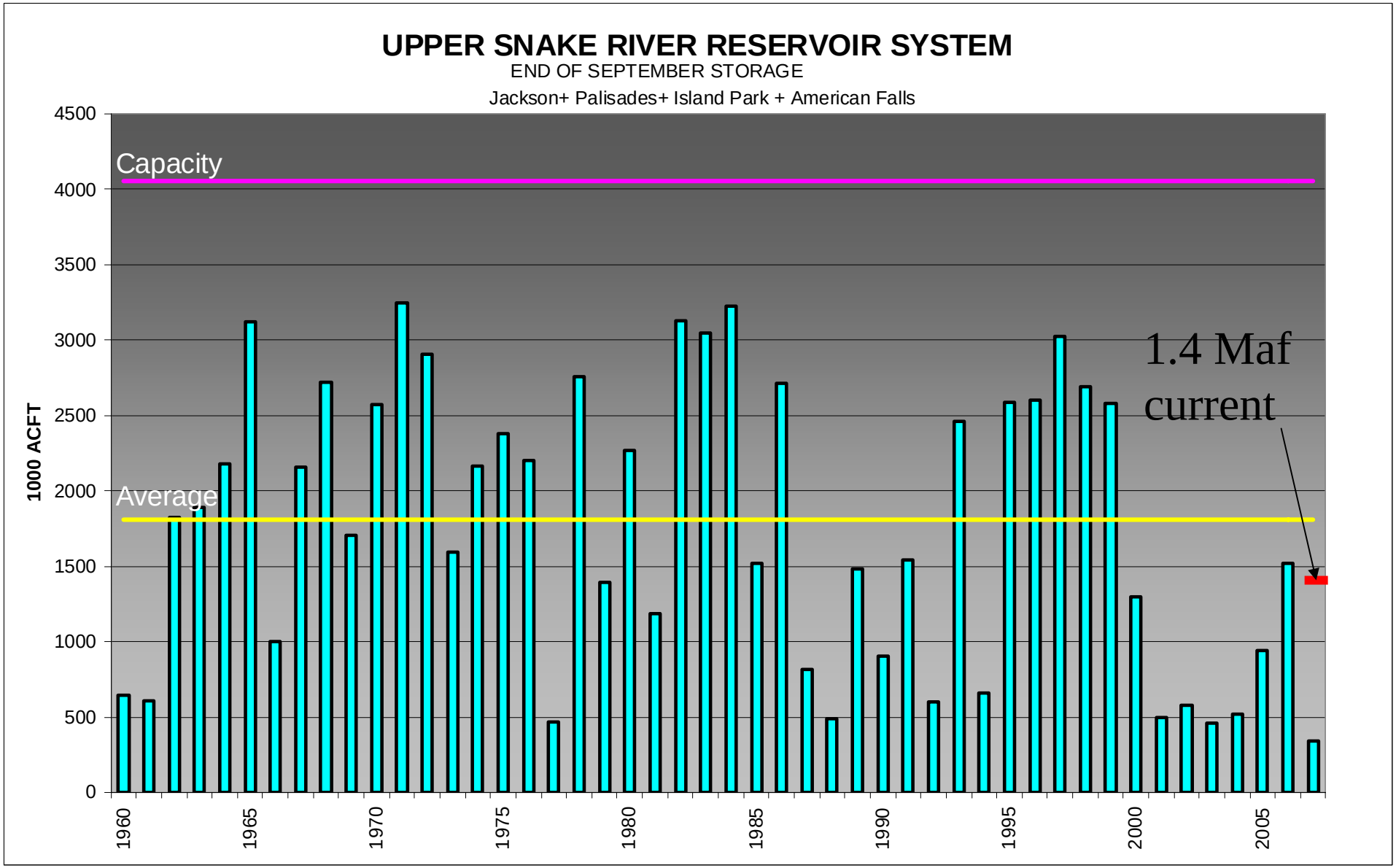
# BEAR LAKE ADJUSTED STORAGE RELEASE

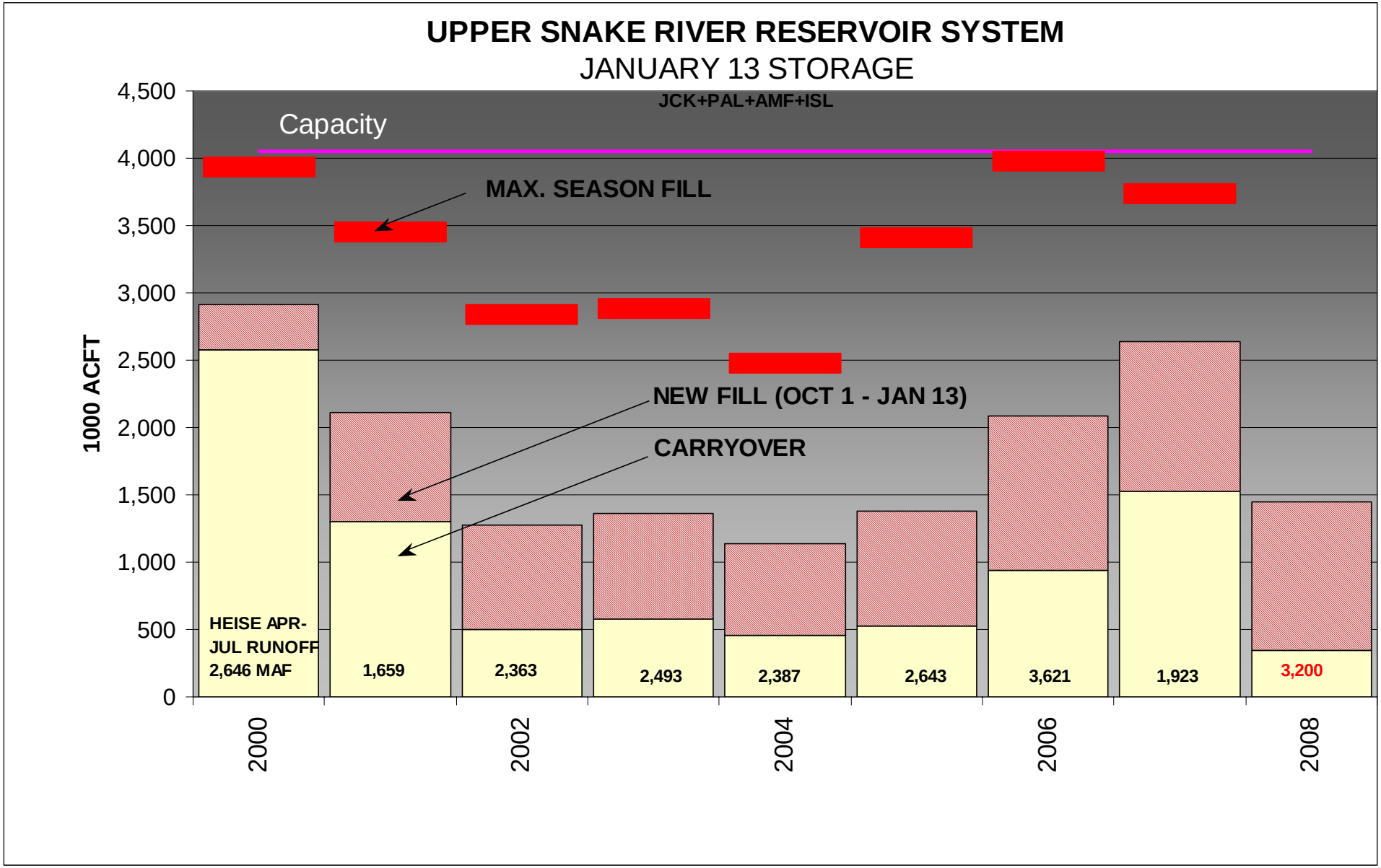
## OUTLET CORRECTED FOR RAINBOW, DINGLE AND DECREE ADJUSTMENT




Bear Lake Inflow
APRIL THROUGH SEPTEMBER RAINBOW INLET CANAL VOLUME
1000 Acre Feet
700
600
500
400
300
200
100
0
Average
1970
1976
1982
1988
1994
2000
2006


BEAR LAKE END OF MONTH STORAGE
WATER YEARS 1922-2007
UPDATED THRU Oct 2007
1000 ACFT
1600
1200
800
400
0
ELEVATION
5923.65
FULL
5920
5915
5911
5904
UPSTREAM STORAGE RESTRICTION
Lake predicted to rise to 5909.9
Dec-21
Dec-26
Dec-31
Dec-36
Dec-41
Dec-46
Dec-51
Dec-56
Dec-61
Dec-66
Dec-71
Dec-76
Dec-81
Dec-86
Dec-91
Dec-96
Dec-01
Dec-06


UPPER SNAKE RIVER RESERVOIR SYSTEM
END OF SEPTEMBER STORAGE
Jackson+ Palisades+ Island Park + American Falls
1000 ACFT
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Capacity
Average
1.4 Maf
current
1960
1965
1970
1975
1980
1985
1990
1995
2000
2005


UPPER SNAKE RIVER RESERVOIR SYSTEM
JANUARY 13 STORAGE
JCK+PAL+AMF+ISL
Capacity
MAX. SEASON FILL
NEW FILL (OCT 1 - JAN 13)
CARRYOVER
1000 ACFT
4,500
4,000
3,500
3,000
2,500
2,000
1,500
1,000
500
0
HEISE APR-JUL RUNOFF 2,646 MAF
1,659
2,363
2,493
2,387
2,643
3,621
1,923
3,200
2000
2002
2004
2006
2008

| % of Normal Runoff | Comparable year | Heise Apr-Jul Runoff (1000 ac-ft) | Surface Water Supply Shortfall (ac-ft) | Acres Curtailed | Ground Water Right Priority Date Cut |
|---|---|---|---|---|---|
| 105 | 2006 | 3,621 | 0 | 0 | none |
| 90 | *1989 or 2005** | 3,200 | < 30,000 | > 0 ? | ? |
| 66 | 2007 | 1,923 | 486,000 | 482,449 | 19-Sep-60 |
| 48 | 1977 | 1,177 | 720,000 | 703,074 | 4-Sep-50 |
| | | | | | |
| | * 2005 had 74% of normal runoff, but storage supplies are comparable to this year on this date. | | | | |