

# Snow Survey and Water Supply Forecast Assessment

Klamath Intergovernmental  
Workgroup

November 3, 2004

Portland, Oregon

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USDA-NRCS

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Portland, Oregon

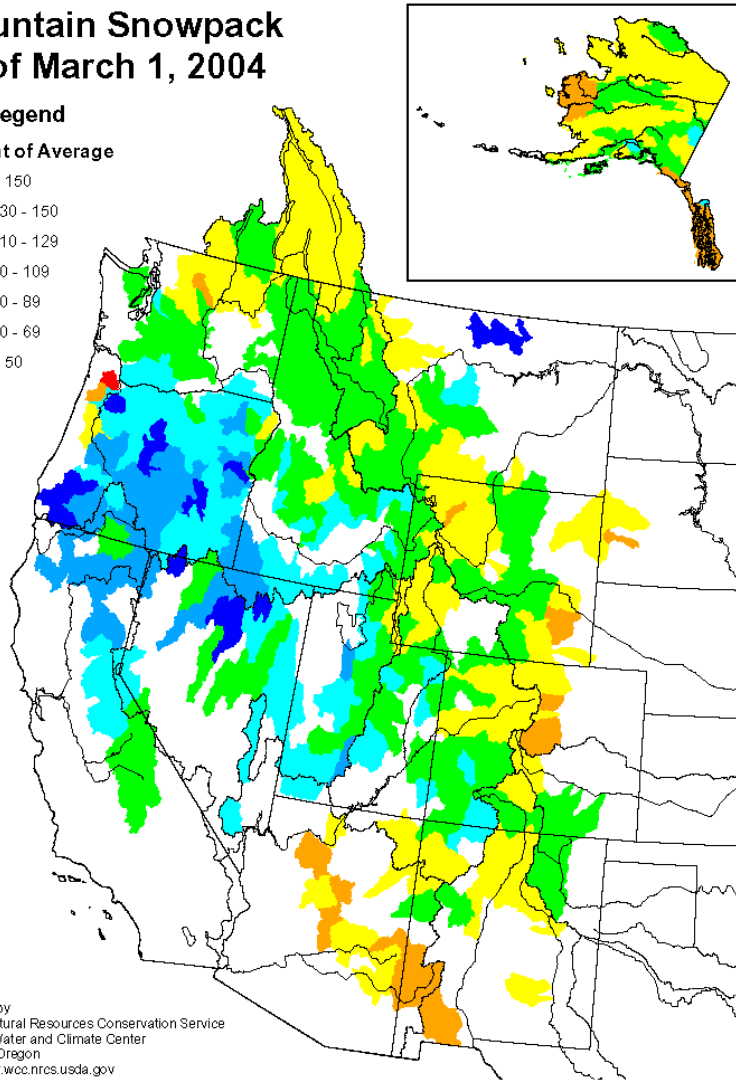
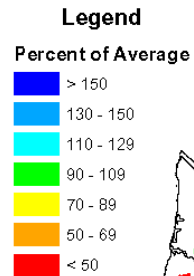
# Water Year 2004 In Review



- A year of significant change – a promising snowpack March 1 snowpack was dramatically reduced by a very dry and warm dry fall on the heels of a dry WY-2003
- A very wet/snowy January and February, snowpacks above average in most basins
- The bottom falls out of western snowpacks during March and April - record lack of precipitation with warm temperatures
- Many basin water supplies <70% of average
- Drought continues for 5<sup>th</sup> year in Intermountain West

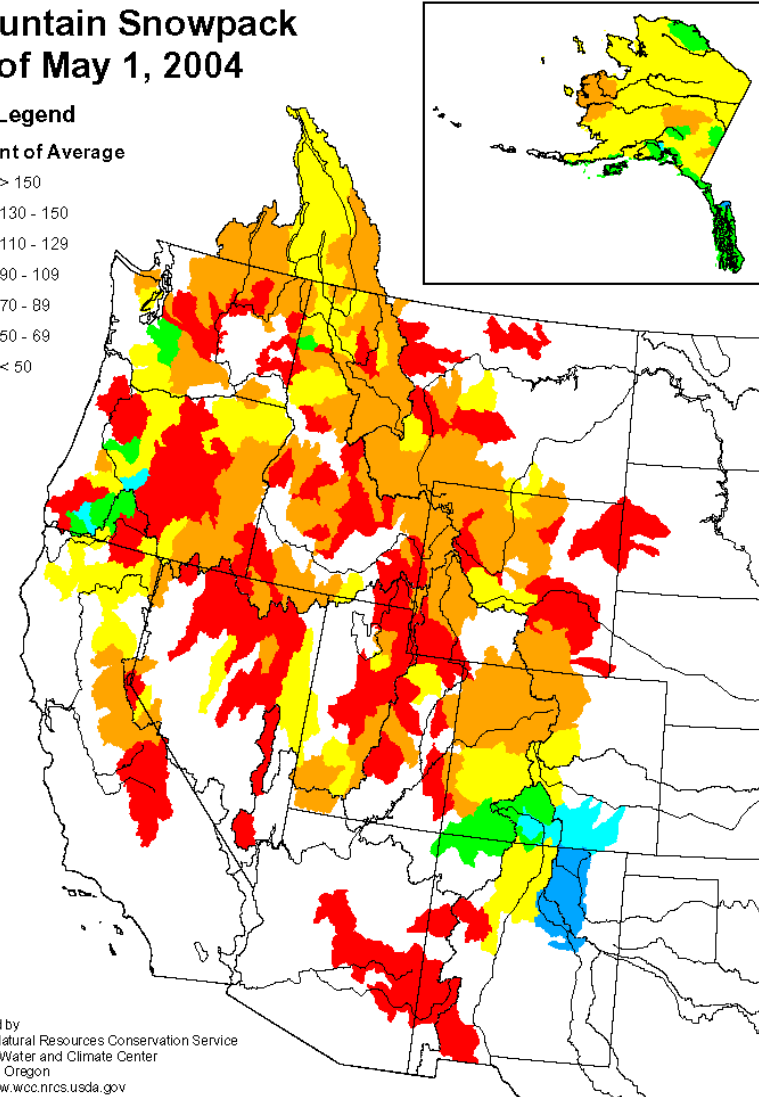
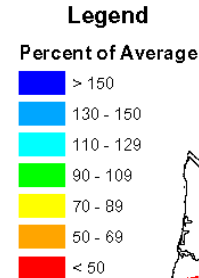
# Rapid Change in Snowpack – March to May

## Mountain Snowpack as of March 1, 2004

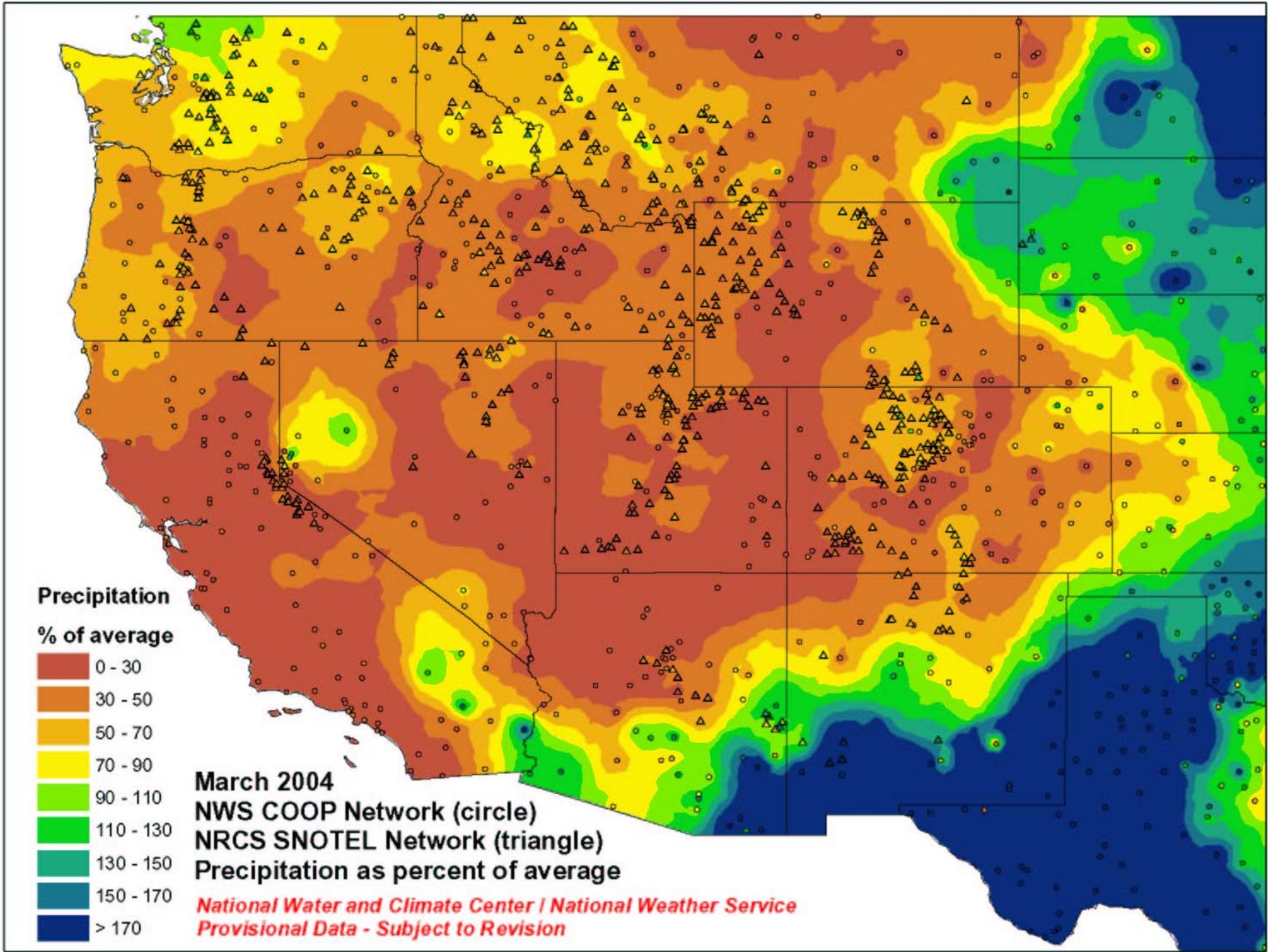


Prepared by  
USDA, Natural Resources Conservation Service  
National Water and Climate Center  
Portland, Oregon  
<http://www.wcc.nrcs.usda.gov>

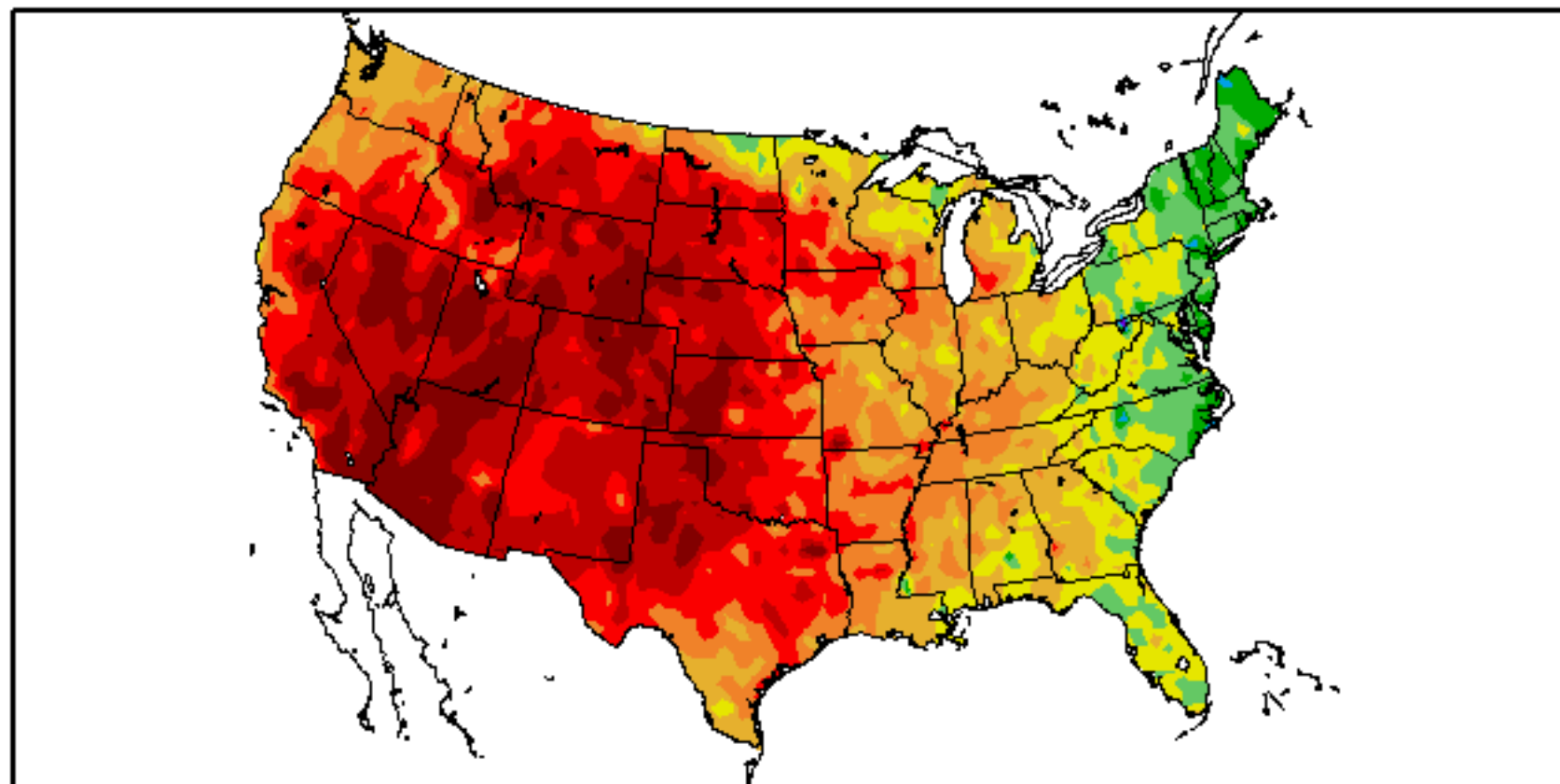
## Mountain Snowpack as of May 1, 2004



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



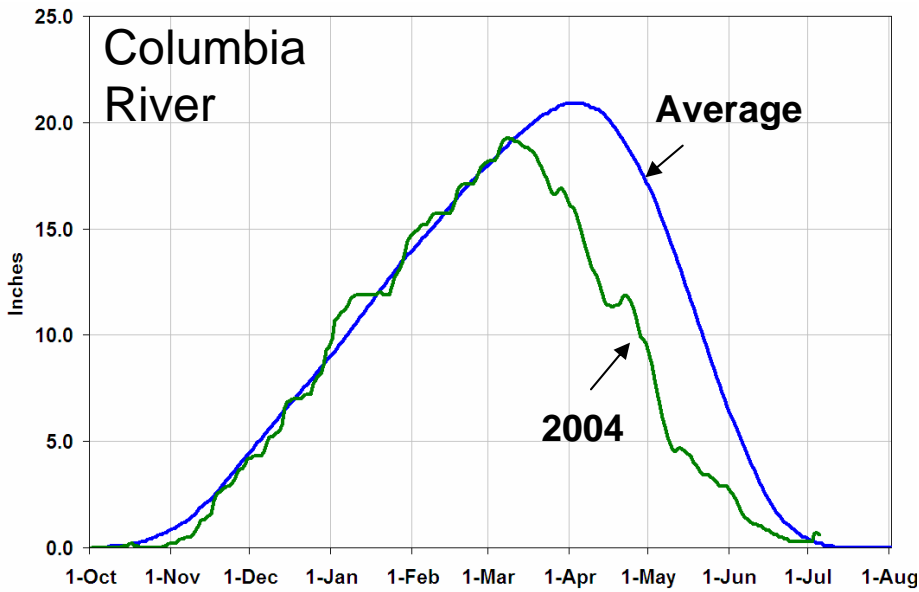
# Departure from Normal Temperature (F) 3/16/2004 - 3/29/2004



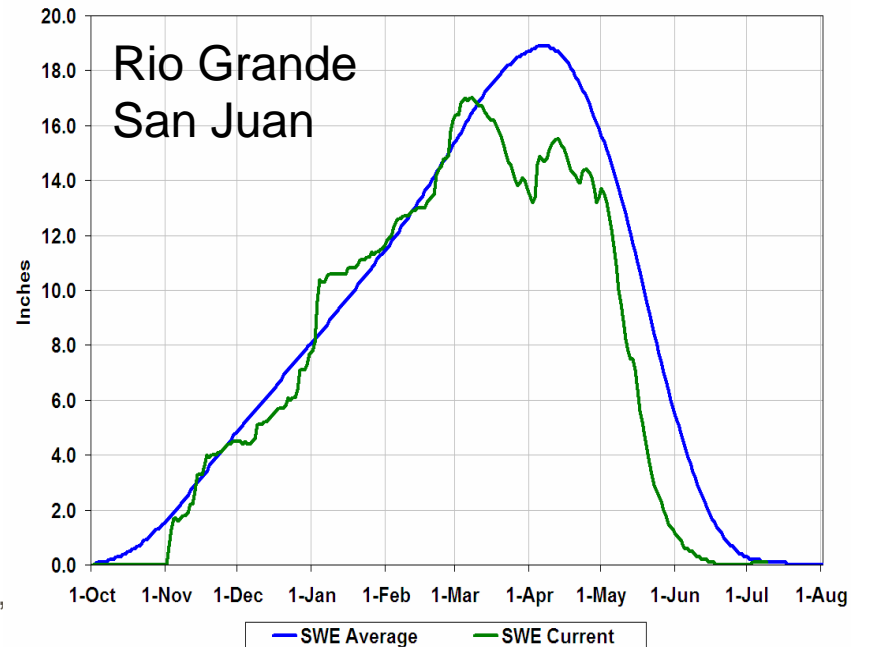
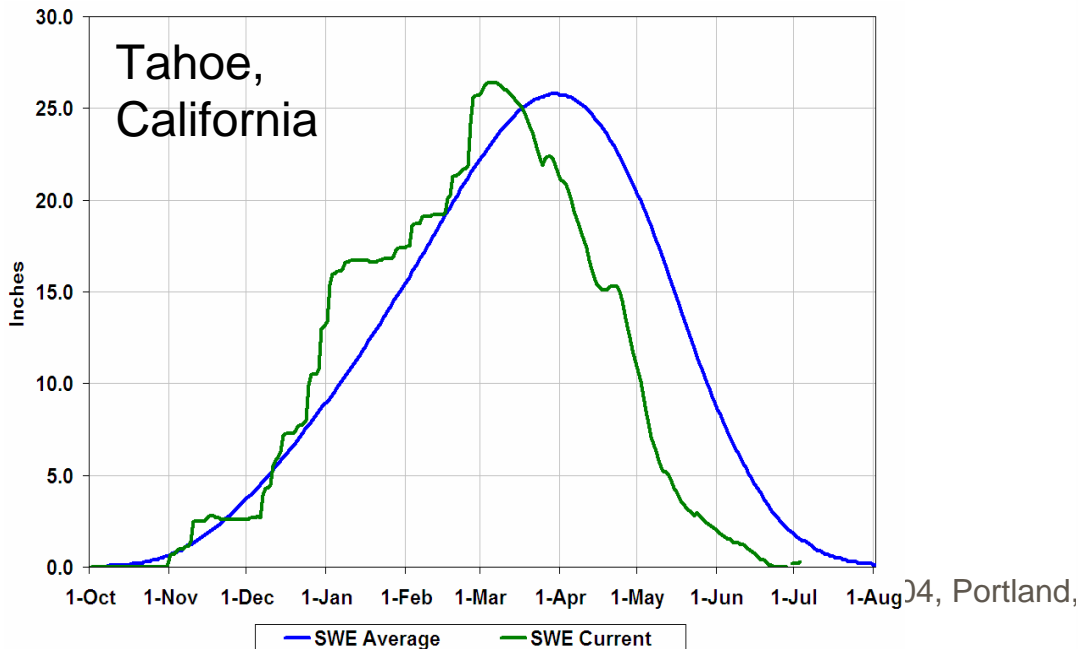
Generated 3/30/2004 at HPRCC using provisional data.

NOAA Regional Climate Centers





Across the West, snowpack began well. Warm temperatures and lack of precip, however, stopped the snow season an entire month ahead of schedule.

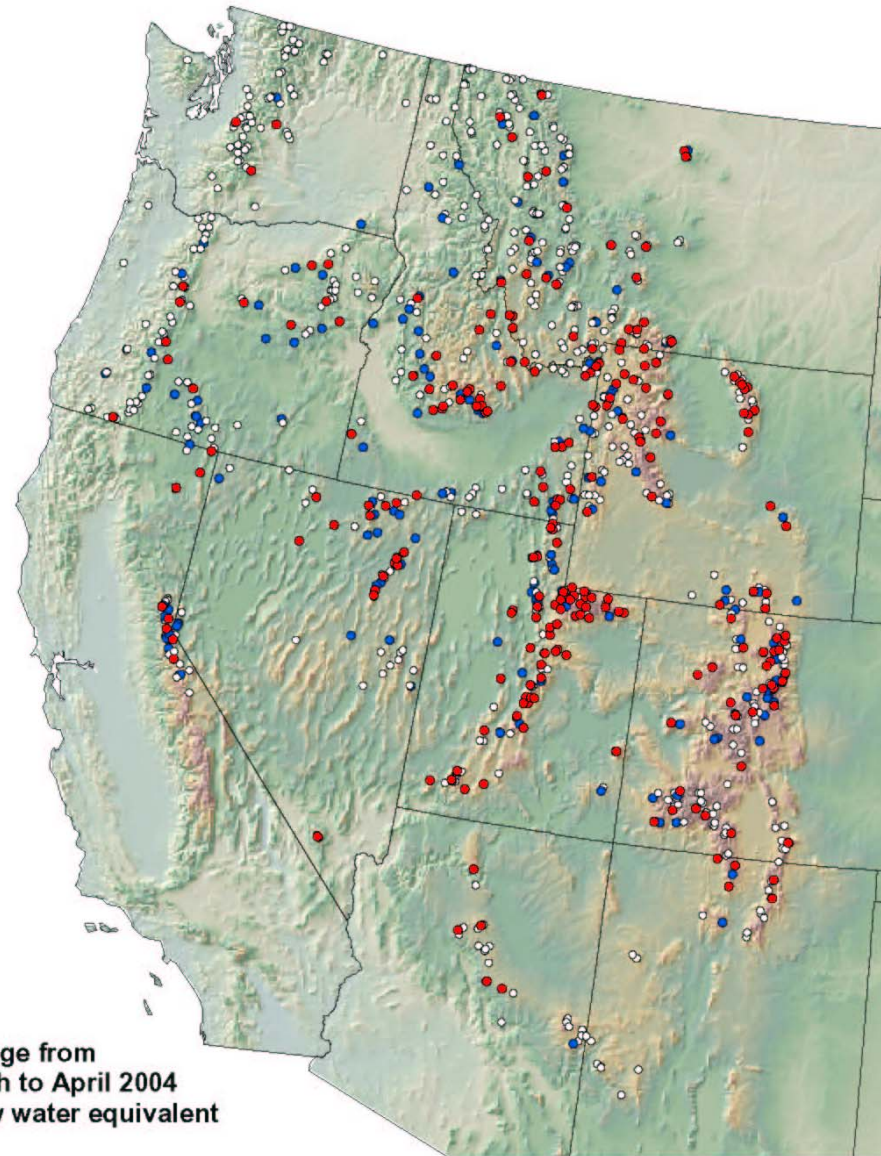


**NRCS Snow Sites  
experiencing  
record or near record  
March to April 2004  
snowpack changes**

- Non-record
- Near record
- New record

Change from  
March to April 2004  
Snow water equivalent

- Non-record
- Near record
- New record



**NRCS National Water and Climate Center  
Snowcourse and SNOTEL networks  
Provisional Data - Subject to Revision**

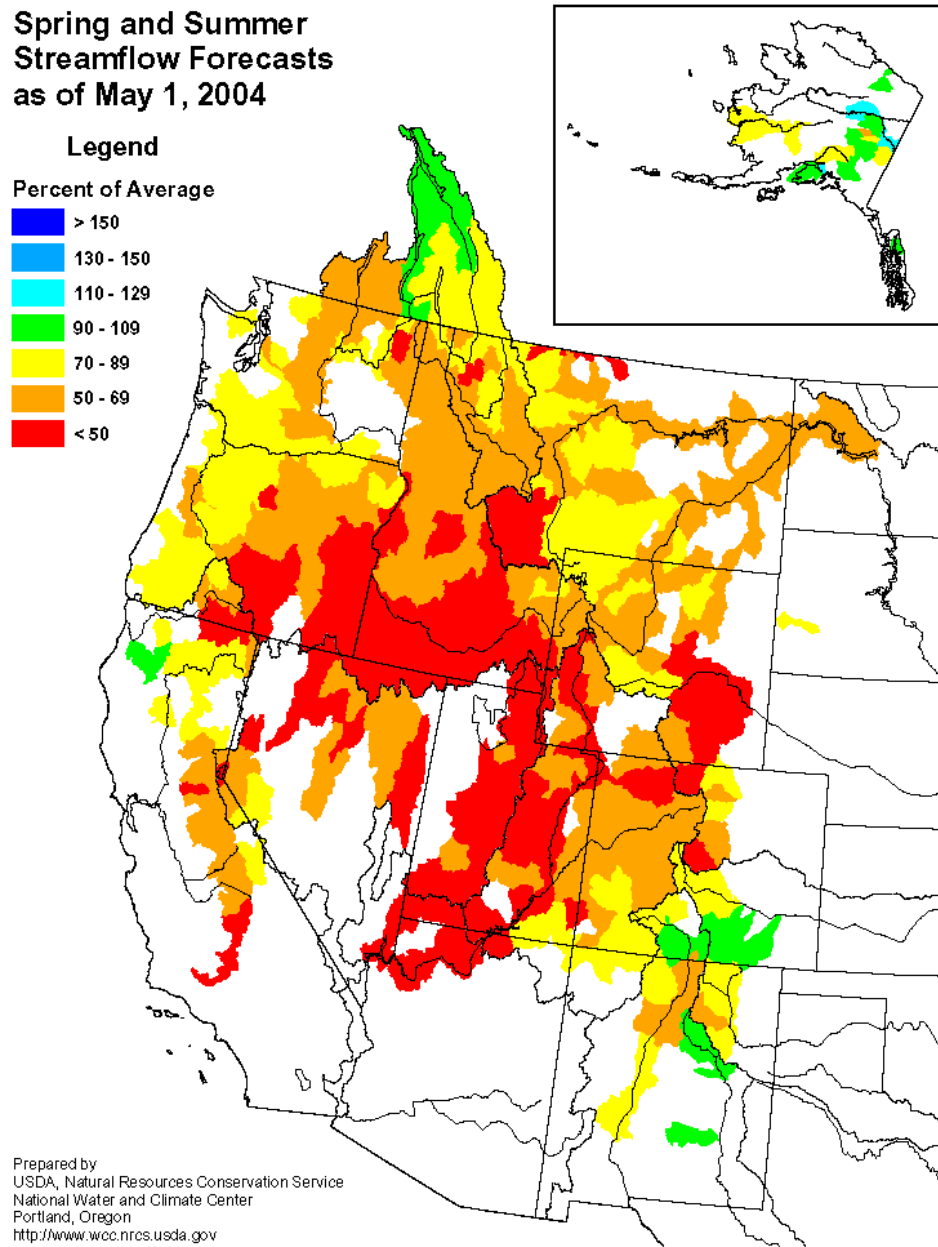
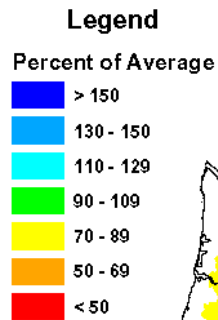
# Streamflow Forecasts

Many Intermountain Basins WSF below 50%

Colorado Basin reservoirs at record low

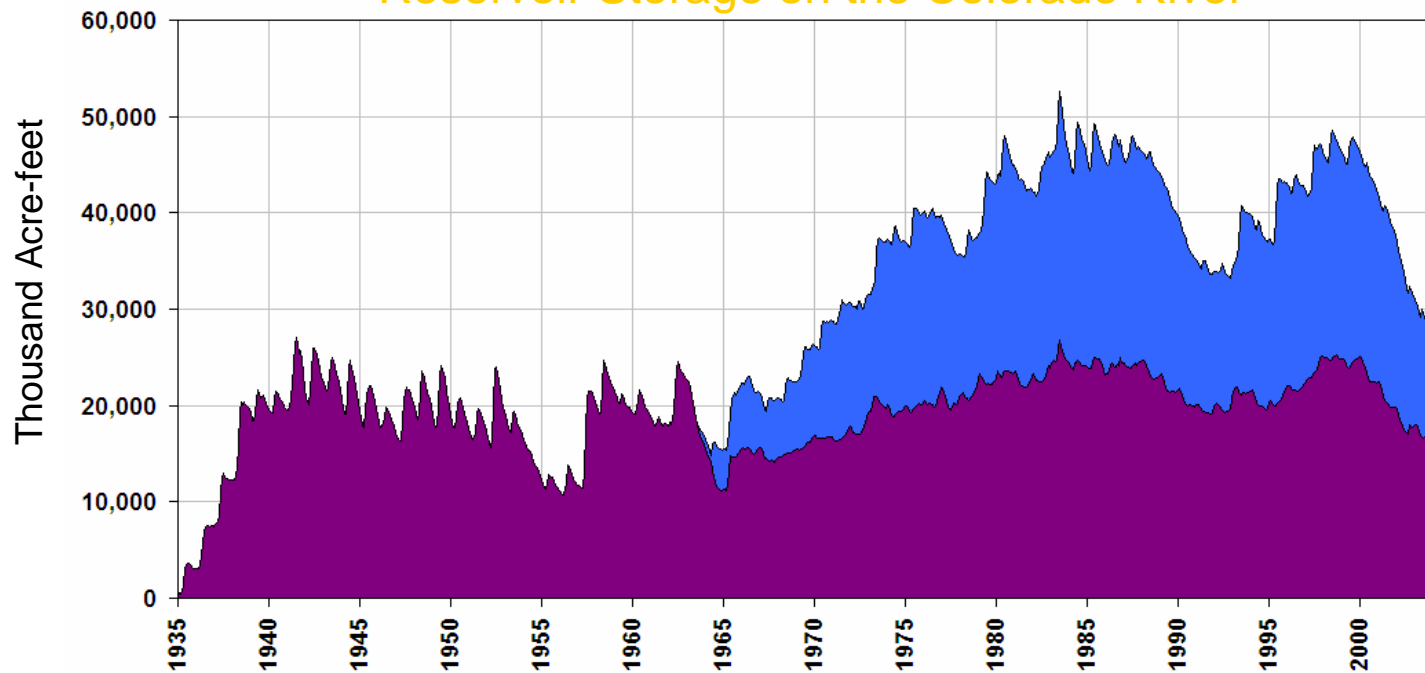
Klamath Basin forecasts provided users excellent guidance

Spring and Summer Streamflow Forecasts as of May 1, 2004





## Reservoir Storage on the Colorado River

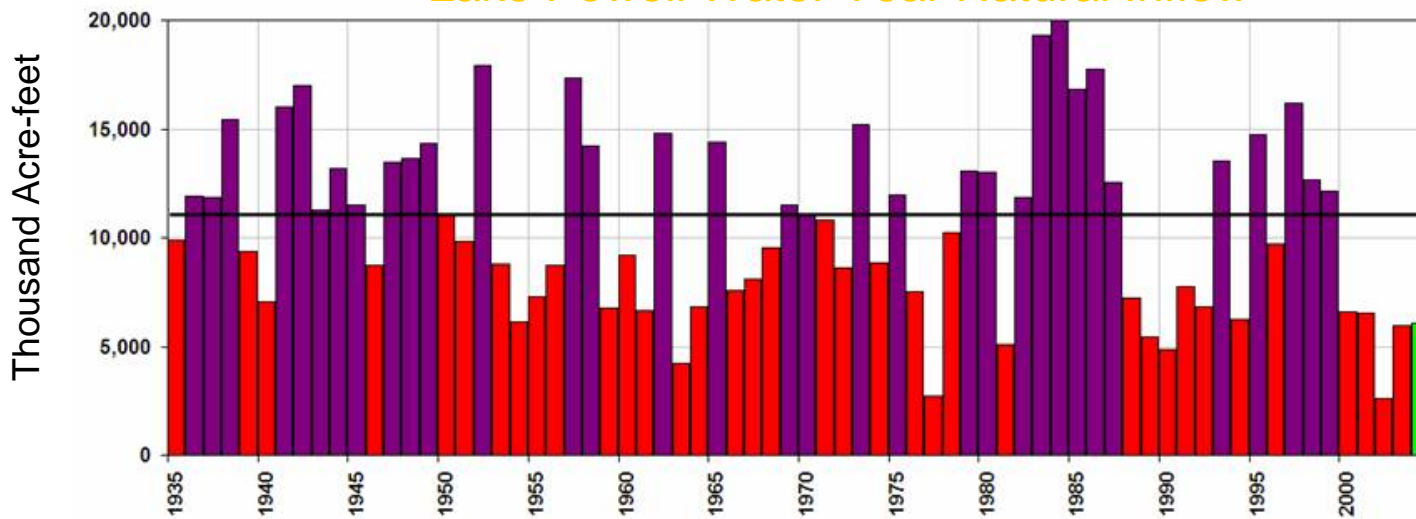


22 Mac-ft loss  
in 5 years

Lake Powell

Lake Mead

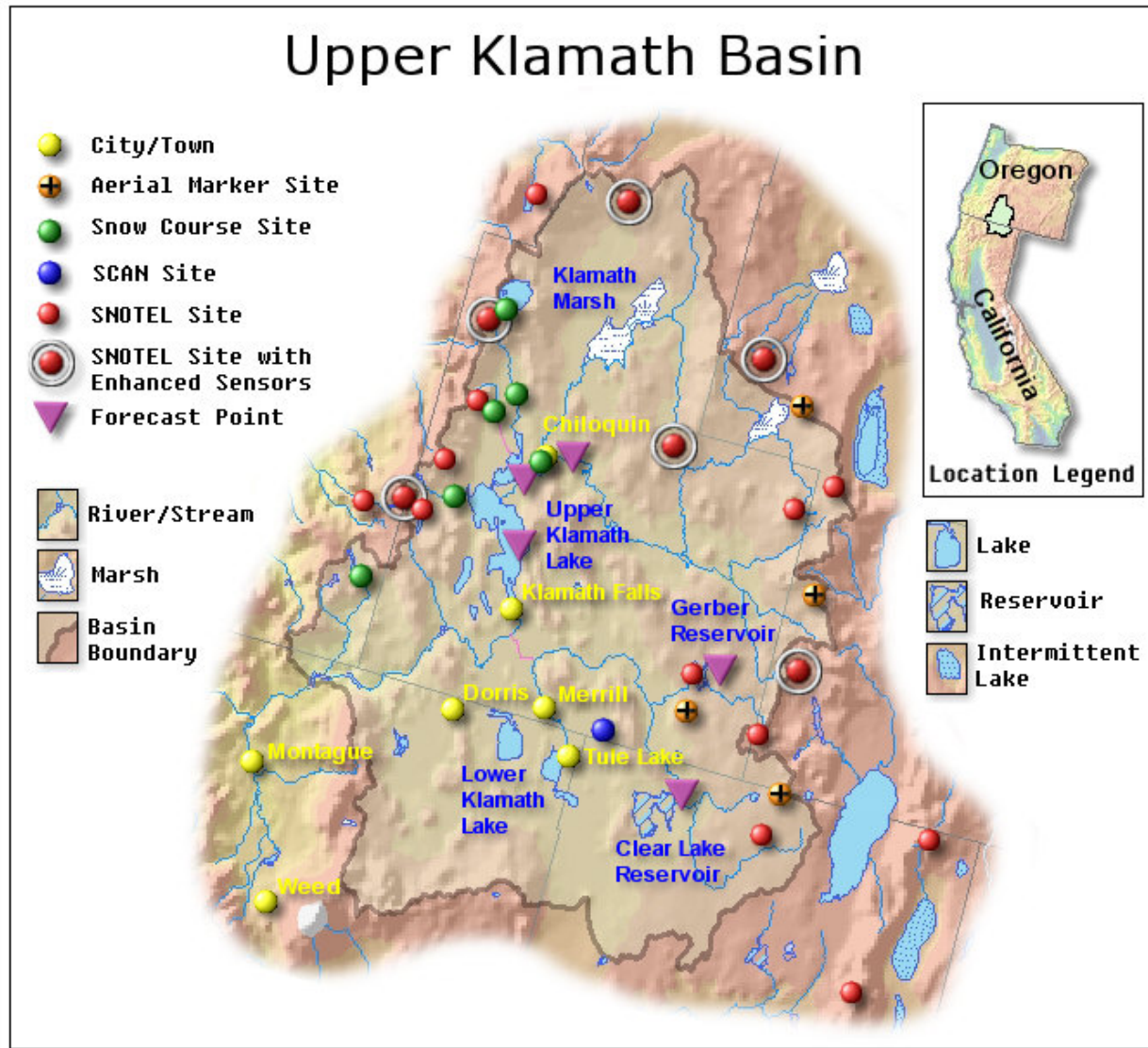
## Lake Powell Water Year Natural Inflow



1935-2004 avg:  
11 Mac-ft

2000-04 avg:  
5.5 MAF 50%  
Worst 5 yrs in 80

# UKB Hydromet Network

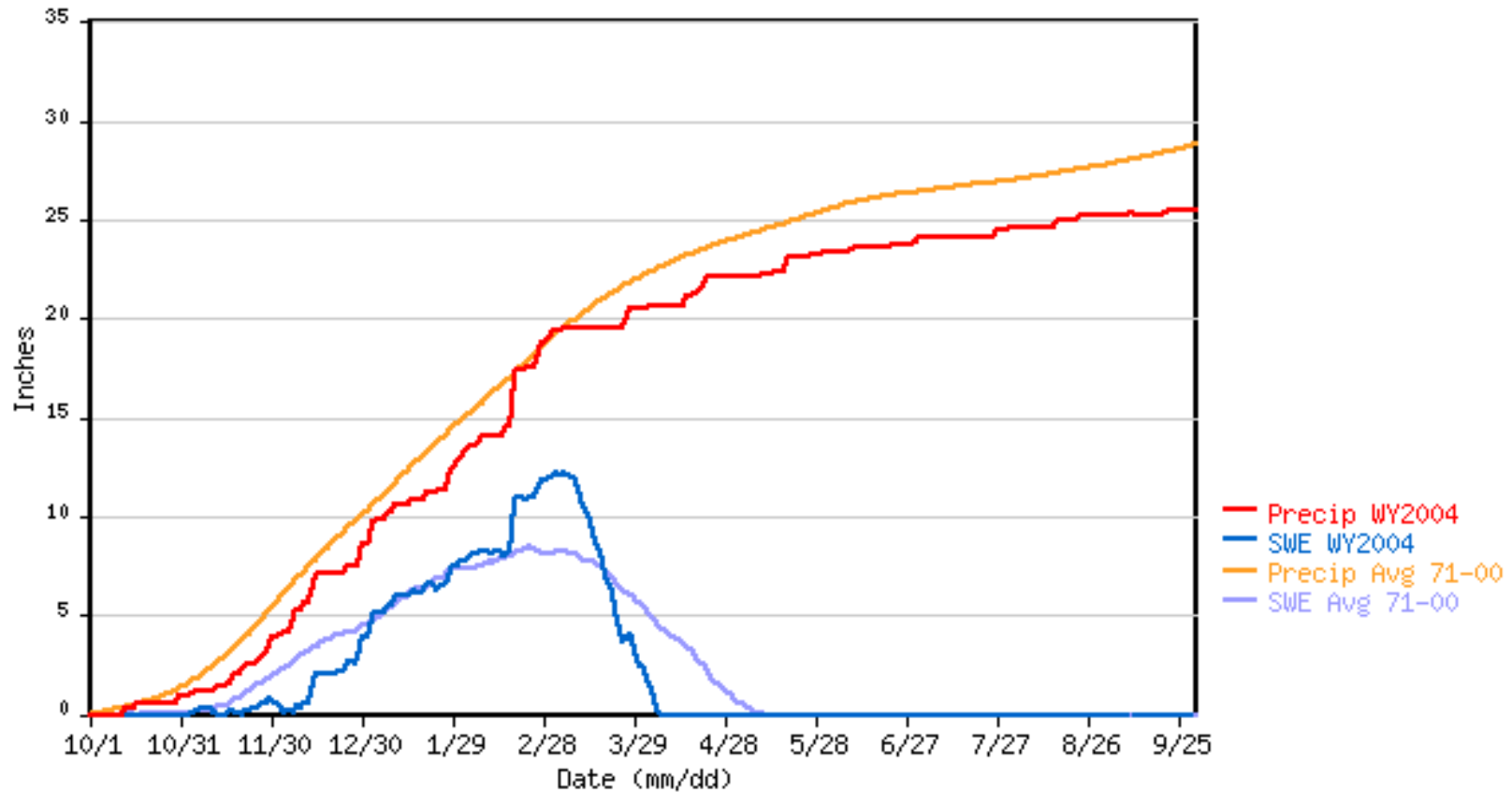


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# UKB SNOTEL Data – WY-2004

CHEMULT ALTERNATE SNOTEL for Water Year 2004

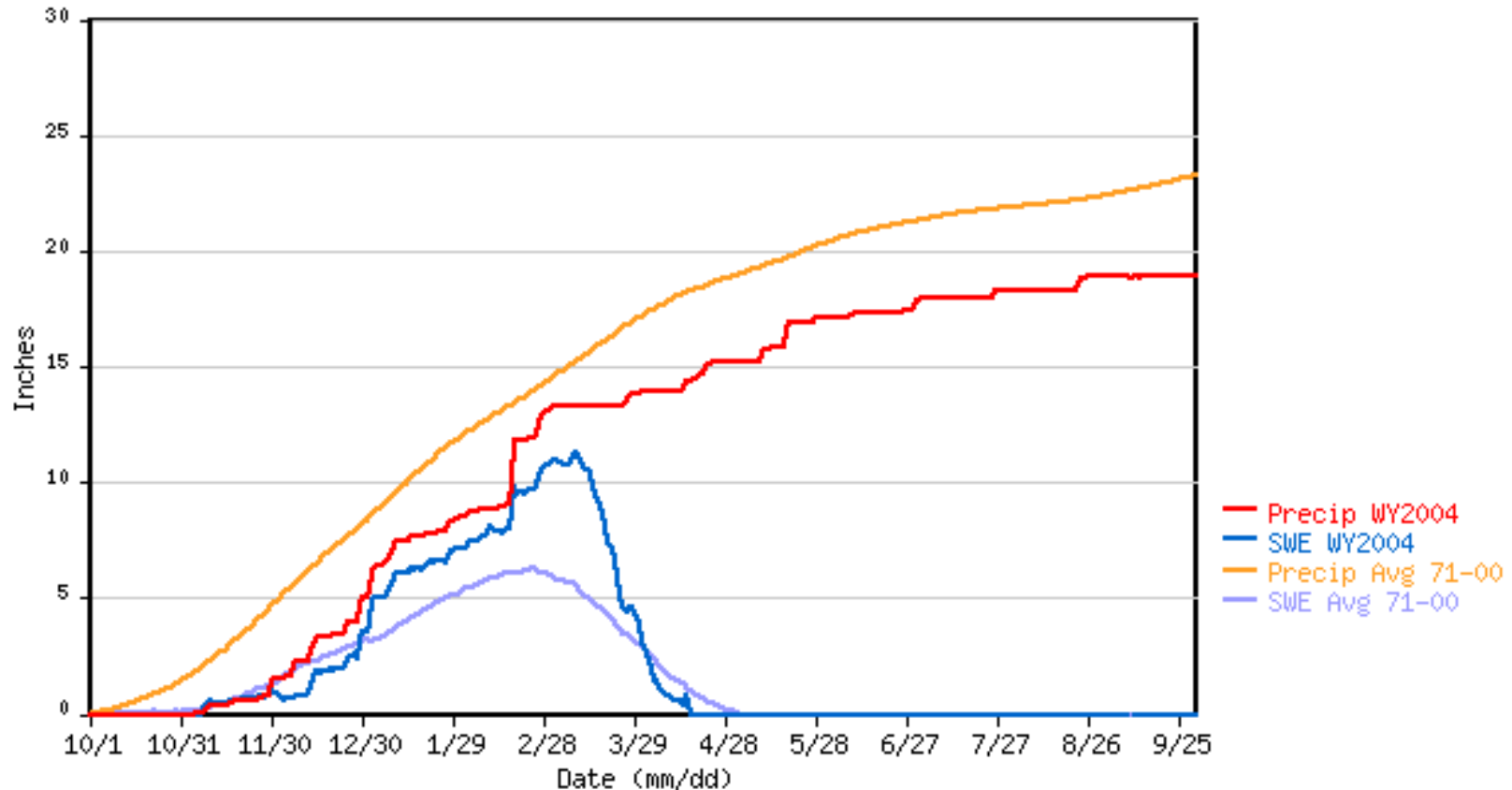
\*\*\* Provisional Data, Subject to Change \*\*\*



# UKB SNOTEL Data – WY-2004

TAYLOR BUTTE SNOTEL for Water Year 2004

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



# Long Term Streamflow Deficit



USGS 11502500 WILLIAMSON RIVER BLW SPRAGUE RIVER NR CHILOQUIN, OR



## EXPLANATION

- MEDIAN DAILY STREAMFLOW BASED ON 84 YEARS OF RECORD
- × MEASURED Discharge
- DAILY MEAN DISCHARGE

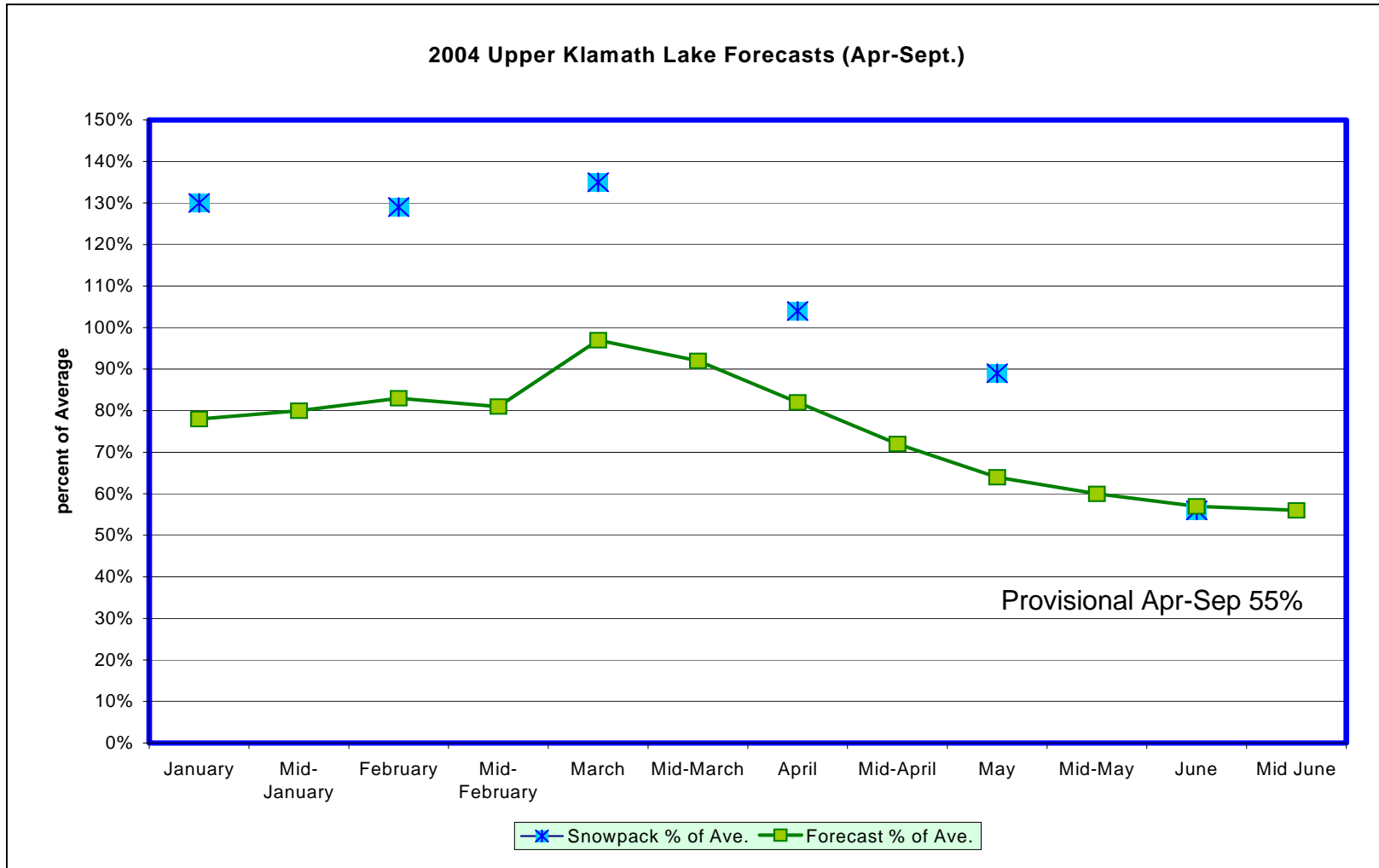
**Provisional Data Subject to Revision**

USGS Williamson River WY-2004 streamflow, a UKL Tributary

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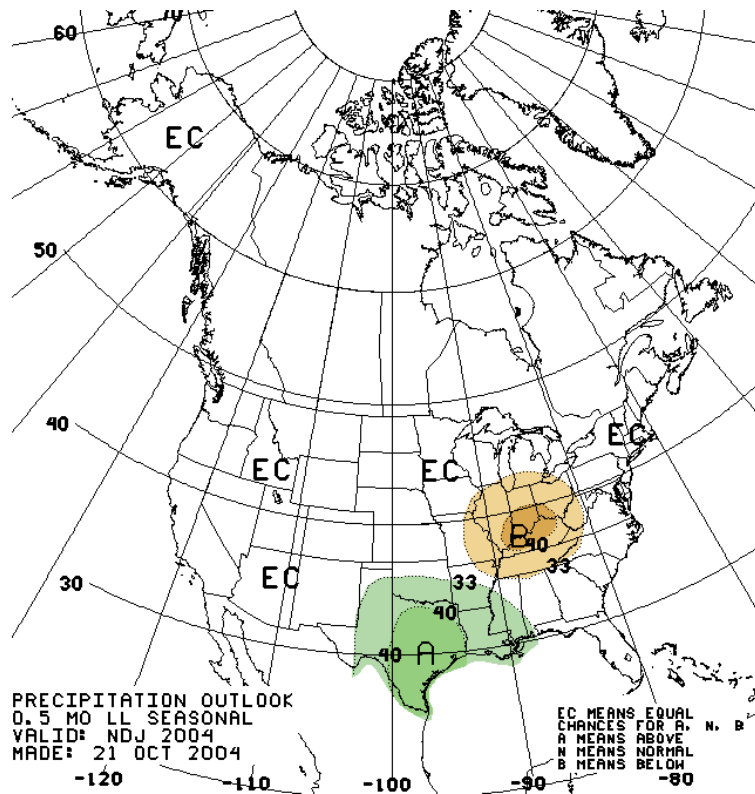
# Klamath Basin WY-2004



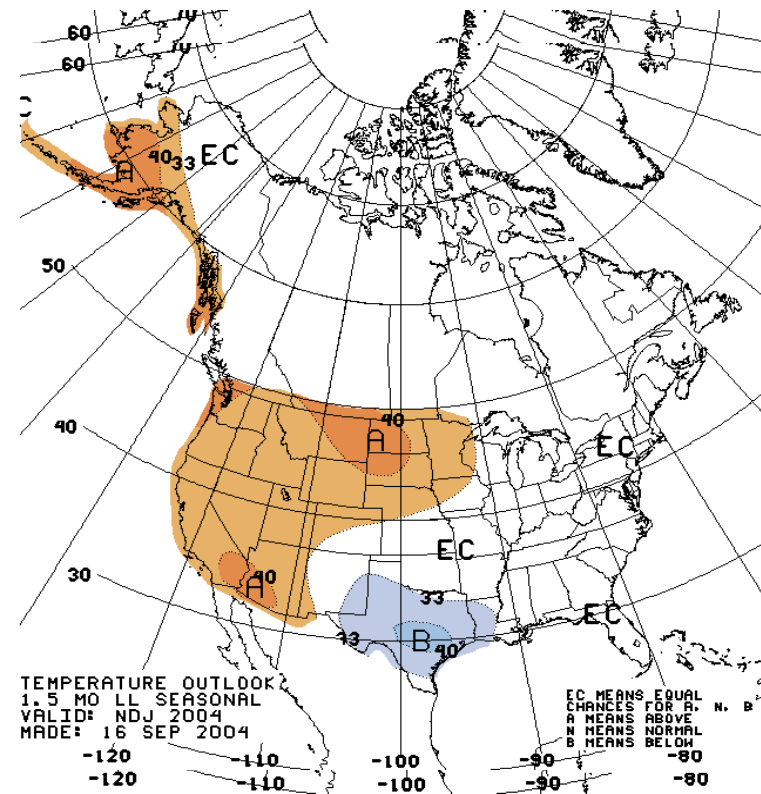
## Upper Klamath Basin Water Year 2004 Snowpack and Water Supply Forecasts

# Climate Forecasts: Nov-Jan

Precipitation: Equal Chances

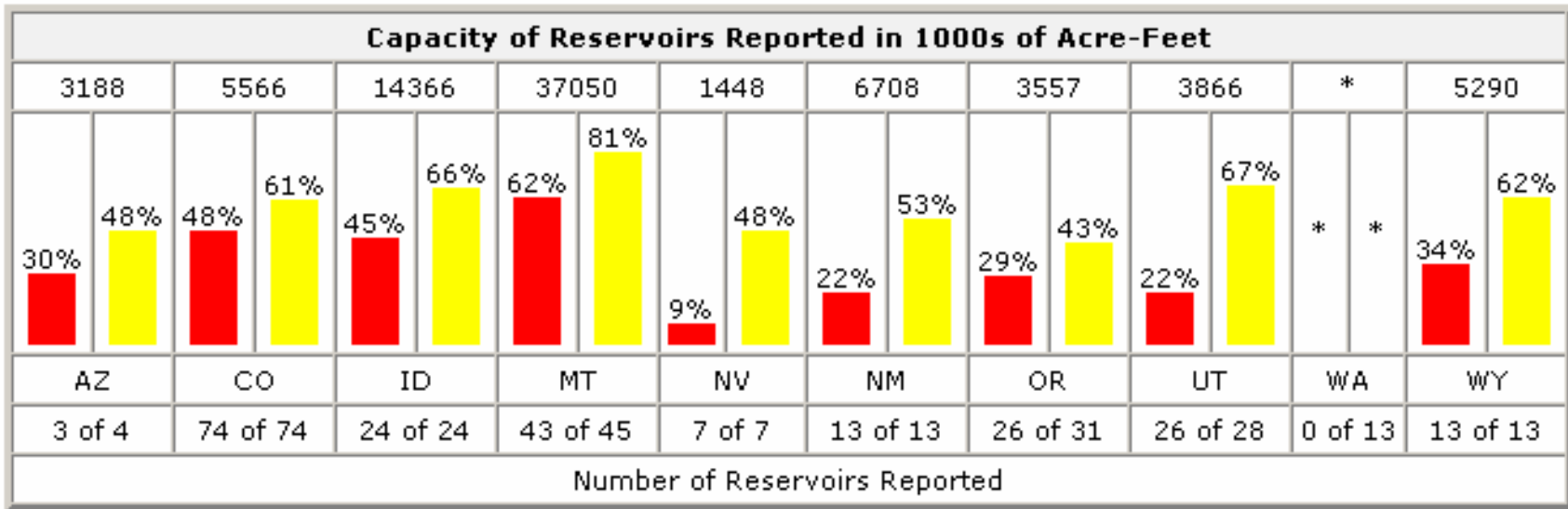


Temp: Warmer Than Average



## Reservoir Storage as Percent of Capacity for October 1st, Water Year 2005

*(Data are provisional and subject to change)*



[Select here for the Reservoir Dataset for this Period](#)

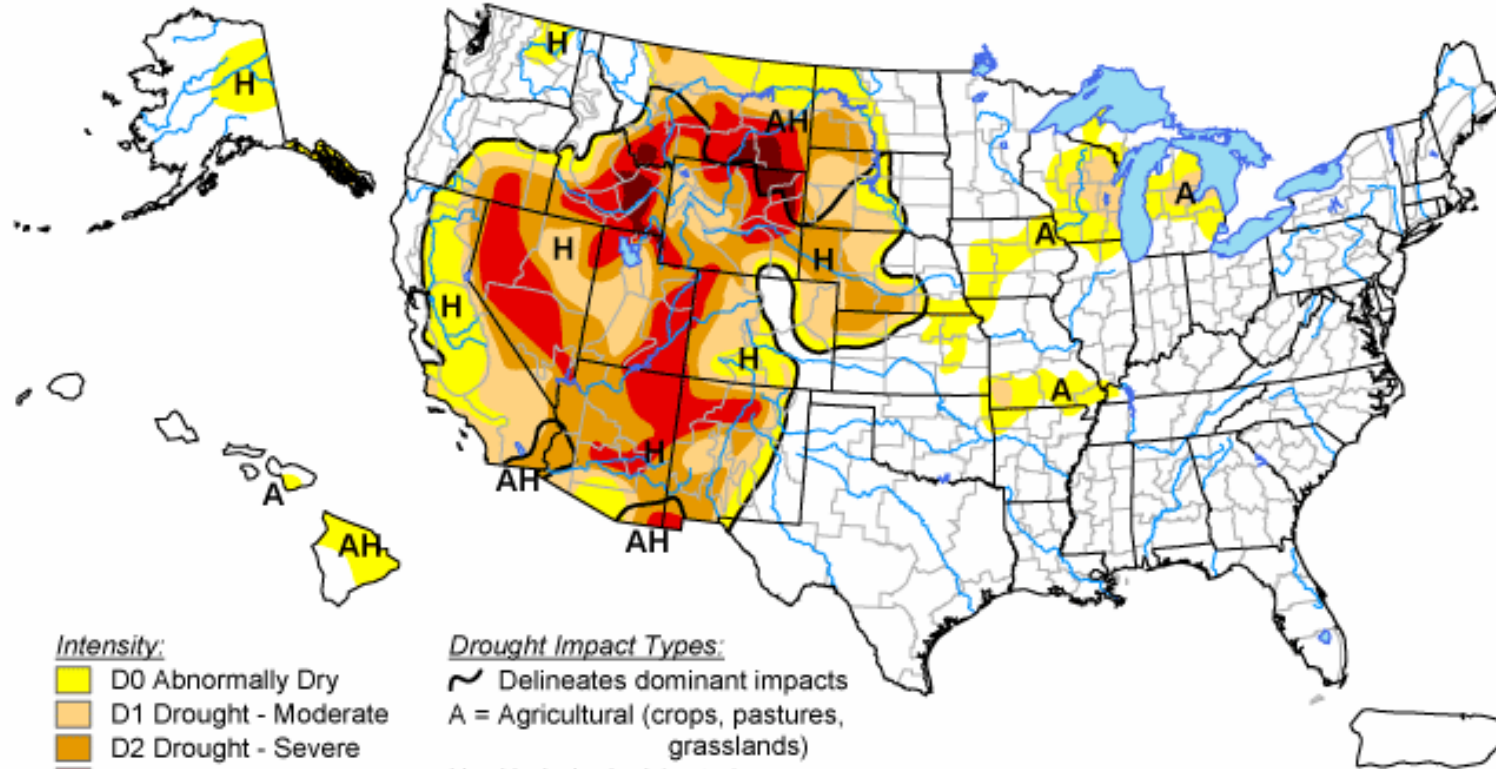
- Storage is Below Average (% of Capacity)
- Storage is At or Above Average (% of Capacity)
- Average Storage as % of Capacity
- \* = Data are not available for this state.








# U.S. Drought Monitor

October 26, 2004


Valid 8 a.m. EDT



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)
- (No type = Both impacts)

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

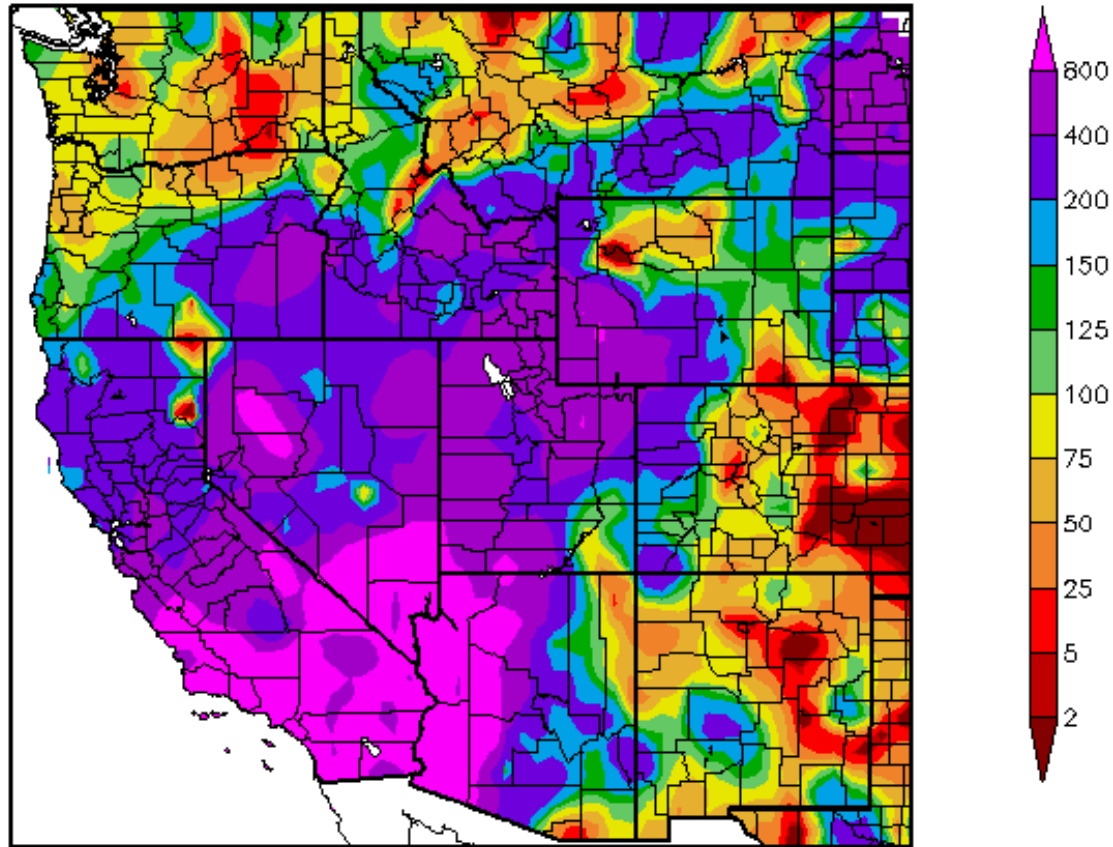
<http://drought.unl.edu/dm>



Released Thursday, October 28, 2004  
Author: Rich Tinker, CPC/NCEP/NWS/NOAA

# A Very Wet Two Weeks in October!

Percent of Normal Precipitation (%)  
10/19/2004 – 11/1/2004

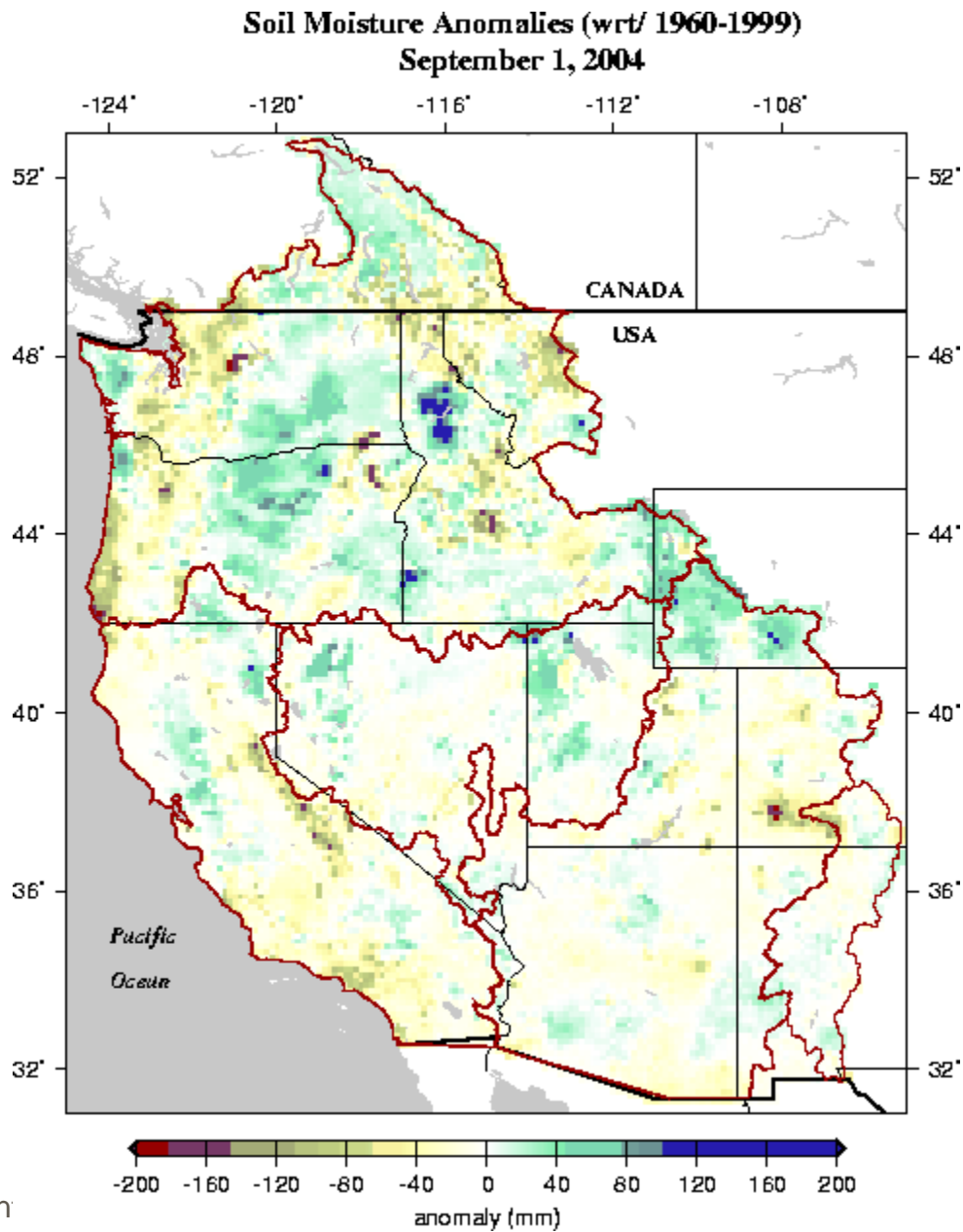


Generated 11/2/2004 at HPRCC using provisional data.

NOAA Regional Climate Centers

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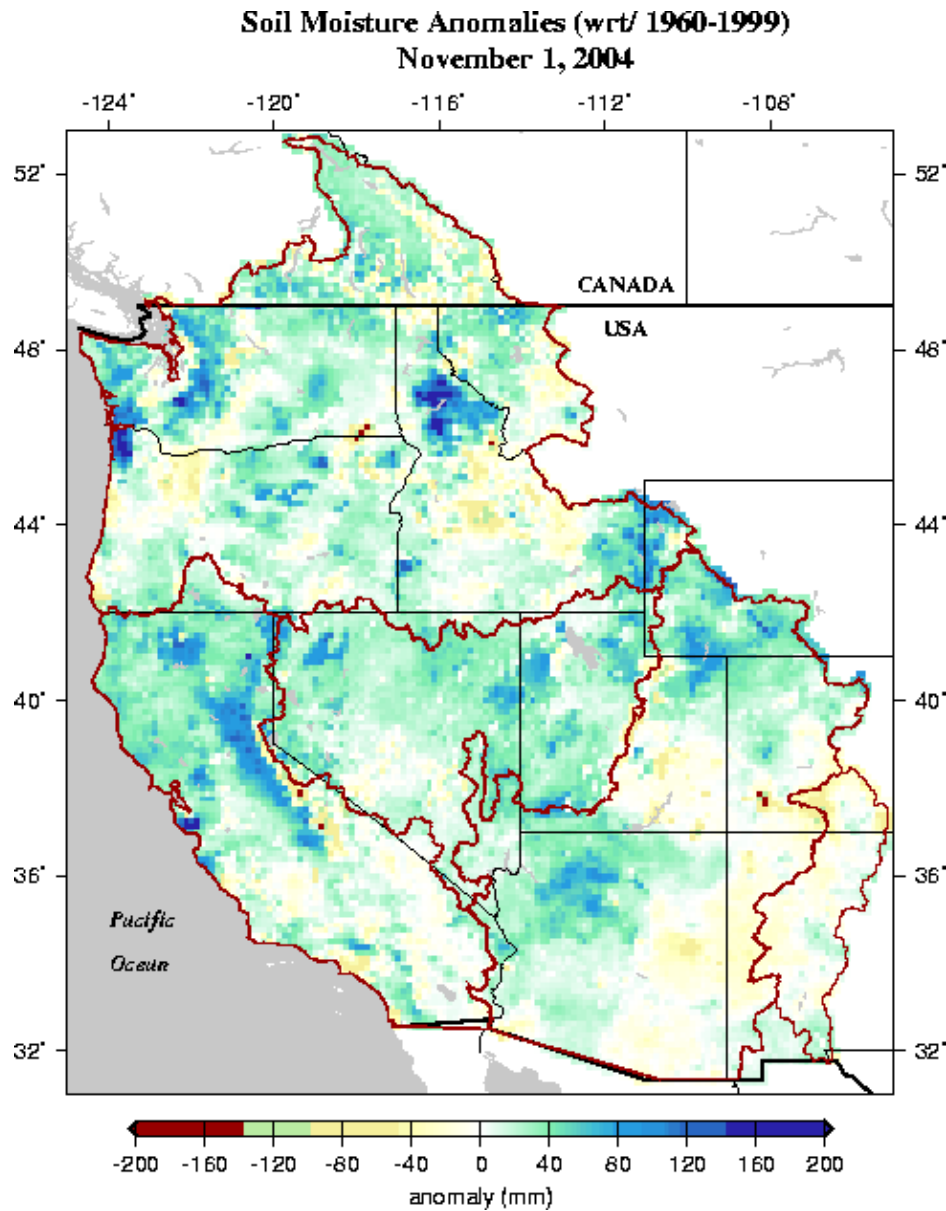
# Univ. Washington Spatial Soil Moisture Simulations: Anomalies (mm: wrt 1960-99)



Soil  
Moisture  
still lacking  
in many  
Western  
Basins

Klamath In

# Univ. Washington Spatial Soil Moisture Simulations: Anomalies (mm: wrt 1960-99)

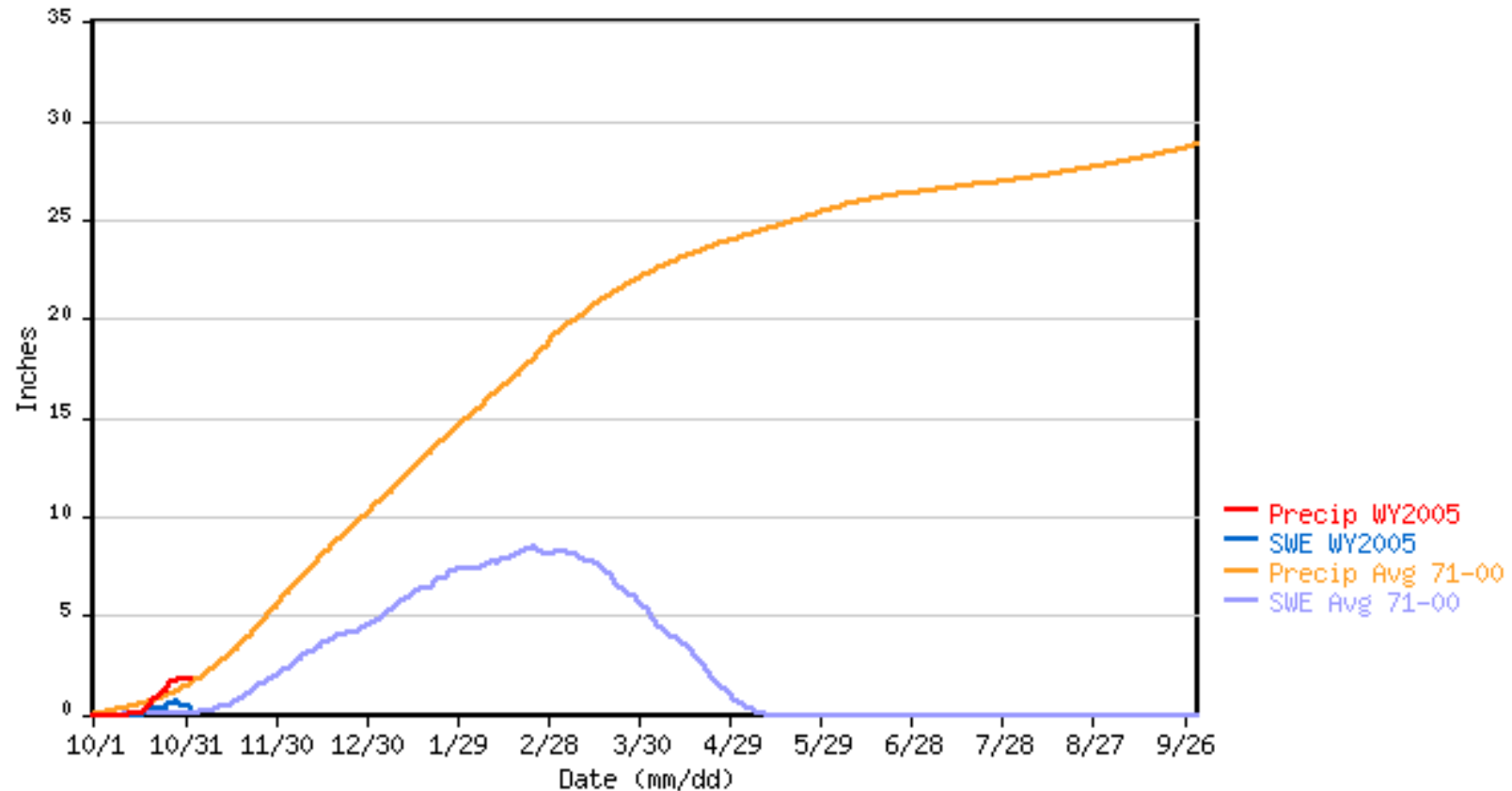


Soil  
Moisture  
makes a  
significant  
rebound.

# UKB SNOTEL Data – WY-2005

CHEMULT ALTERNATE SNOTEL for Water Year 2005

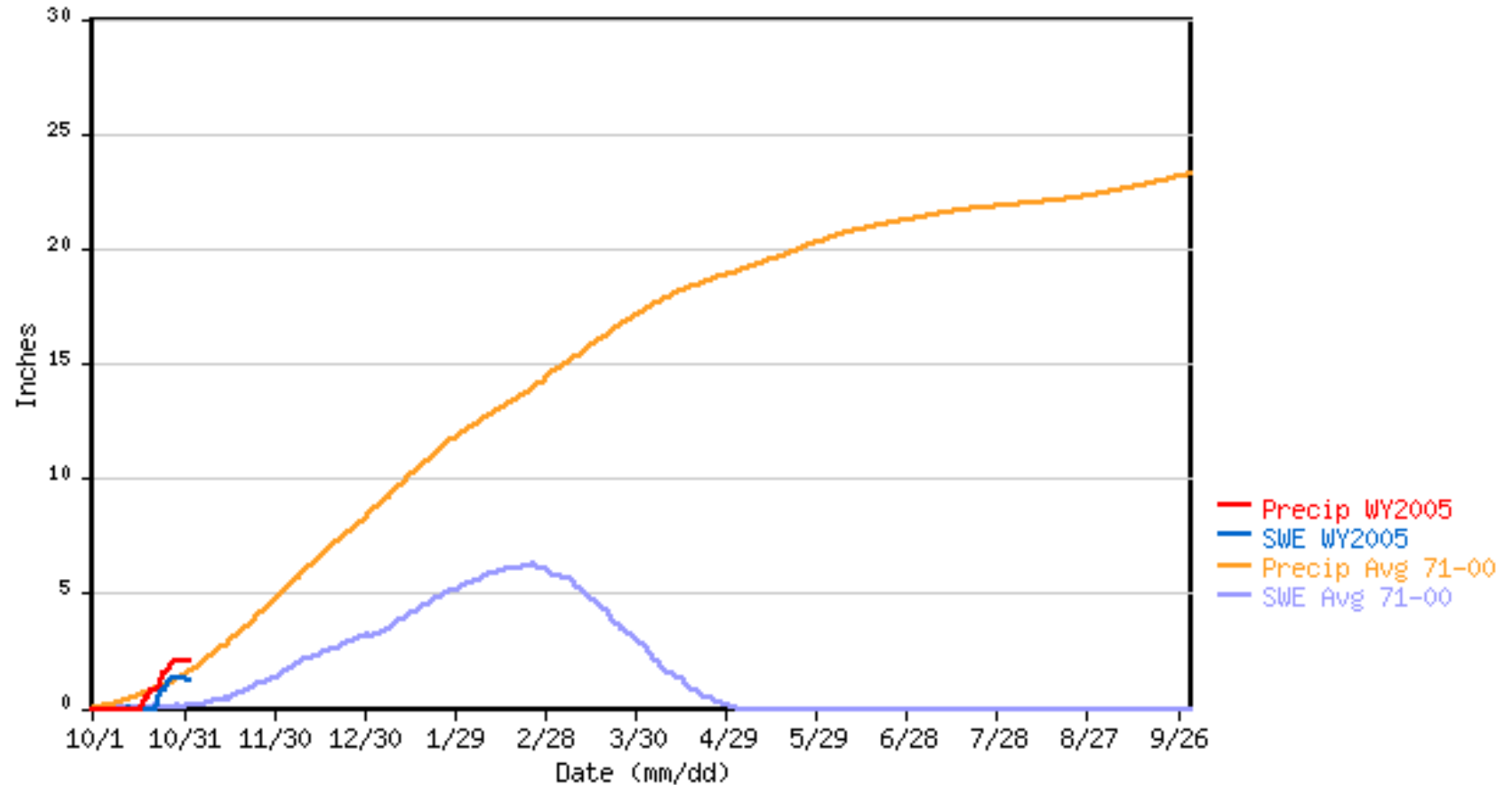
\*\*\* Provisional Data, Subject to Change \*\*\*



# UKB SNOTEL Data – WY-2005

TAYLOR BUTTE SNOTEL for Water Year 2005

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



# Klamath Basin Keys

- Replenish groundwater deficits.
- Continued wet fall.
- Build above average snowpacks through April.
- Slow melt in the spring.

# Thank You!



Clear Lake SNOTEL, Mt. Hood

**[www.wcc.nrcs.usda.gov](http://www.wcc.nrcs.usda.gov)**

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