

# **Idaho Water Supply Outlook Report**

## **January 1, 2015**

**12<sup>th</sup> Annual NWS  
Spring Flood  
Outlook &  
Meeting  
Jan 30, 2015  
Pocatello, Idaho**



**The good news:  
only need 2 or 3 big  
storms depending**

An avalanche on Sunday December 21<sup>st</sup> shows the unstable conditions created by the mid-December storm

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

# Winter 2013-2014 What Happened?

Boulder Mountains near Sun Valley , looking SE from Hwy 93 South of Galena Lodge after Major Snow, Rain & Wind Event January 11-14, 2014



Three great barrels from Sunday 19/01 at Peahi.

# Surf's Up

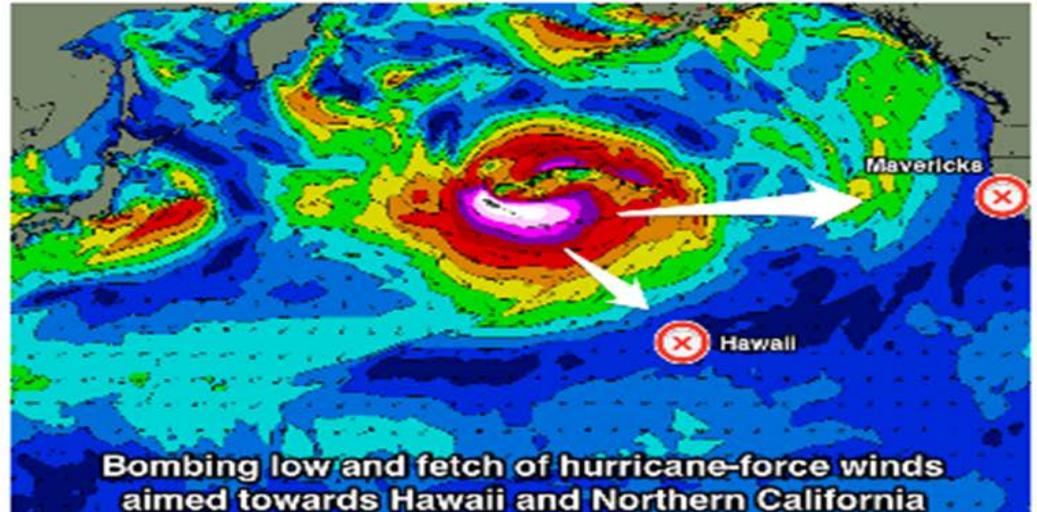
Jan 22, 2014

30-40 (60-80) foot waves & erratic winds cancel Hawaii Surfing Event



## All eyes on Hawaii as huge storm approaches

A fortnight ago the eyes of the surfing world were on Europe and the 'Hercules' storm that burst out of the North Atlantic Ocean. At the time Hawaii was almost unsurfably small. Since then a series of storms in the North Pacific have wrested attention back to the Hawaiian Islands. The great run of swell will be capped by a beast of a system; a storm that has longtime forecasters cooing with excitement.



# Another Signal of What Might be Expected Soon:

Jan 14 2014 daily SOI (Southern Oscillation Index) value was above 50 & pressure at Darwin was at 998mb for 2<sup>nd</sup> consecutive day.

*A reading of a 50 does not occur often, based on 23 years of record.*

Here are FEW times the daily number SOI has been in the mid 40's or above and following events:

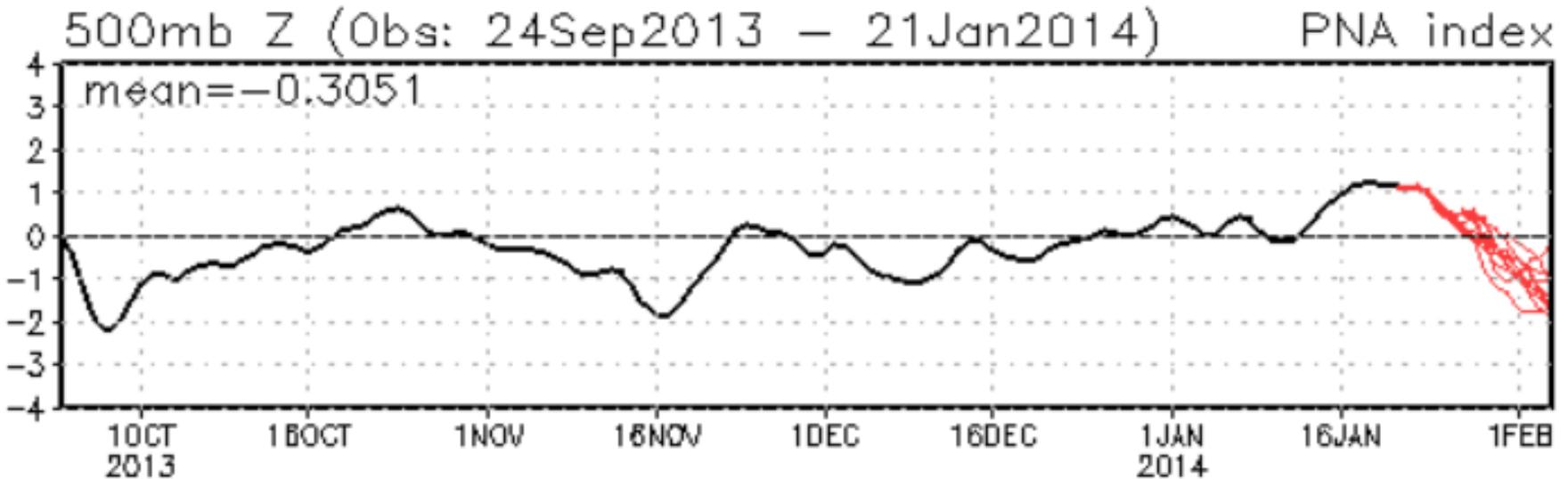
- Jan 14/15 2014: (44.17, 50.71)... Abundant Moisture Feb/Mar 2014
- Dec 25 2011: (49.20) ..... Snowstorm/Arctic Blast Jan 14, 2012
- Jan 17/18 2011: (50.87, 55.43)..... Snow/Arctic Blast Feb 24, 2011
- Dec 22/23 2003: (44.34, 44.34).... Snow/Arctic Blast Jan 2, 2004
- Dec 4/5 2000: (49.61, 47.14)..... Modified Arctic air Dec 10-15, 2000
- Dec 11/12 1998: (51.02, 49.60)..... Major Arctic Blast Dec 19, 1998

It's no fool proof method, but is now showing agreement with weather models.

# The PNA is getting interestingly negative:

Pacific North American Index one parameter (index) that helps bring moisture to Pacific NW but there are others needed too

## PNA: Observed & ENSM forecasts



**NRCS - Jan Curtis - Applied Climatologist retired after 41 years with several agencies.**

**Had a wealth of info to share about current weather & future outlook that might affect snowfall, snow accumulation, snowmelt rates, peak flows, and even fall weather patterns hinting at first frost.**

**The NRCS Meteorologist / Applied Position is vacant – and not slated to be filled.**

**Jan also looked at a number of climate indices including solar activity...**





[Home](#)   [Weather Models](#)   [Current Weather](#)   [Winter Weather Wall](#)   [Snow Day Formula](#)   [2013-2014 Winter Forecast Directory](#)  
[2013-2014 Official Winter Forecast](#)   [\\*\\*Final 2013-2014 Winter Forecast\\*\\*](#)

**From Jan 21, 2015.....**                      **Looking in Early February 2015:**  
**Typhoon Rule – Japan weather happens here 6-10 days later**

**A strong ridge now encompasses all of Japan, bringing a 'heat wave' to the region. This ridge persists for more than a couple of days, which could very well validate my (ANDREW'S) outlook for a mild middle of February.**

**~Feb 4 – 22** The forecast for the PNA is positive for the next two weeks, and a sustained strong positive signal . **This tells me (ANDREW) we're looking at that ridge sticking around the West US for a prolonged period of time into February, though it may very well bleed east into the Central US.**

# Total Precipitation Anomaly: February 2014

Period ending 28 Feb 2014

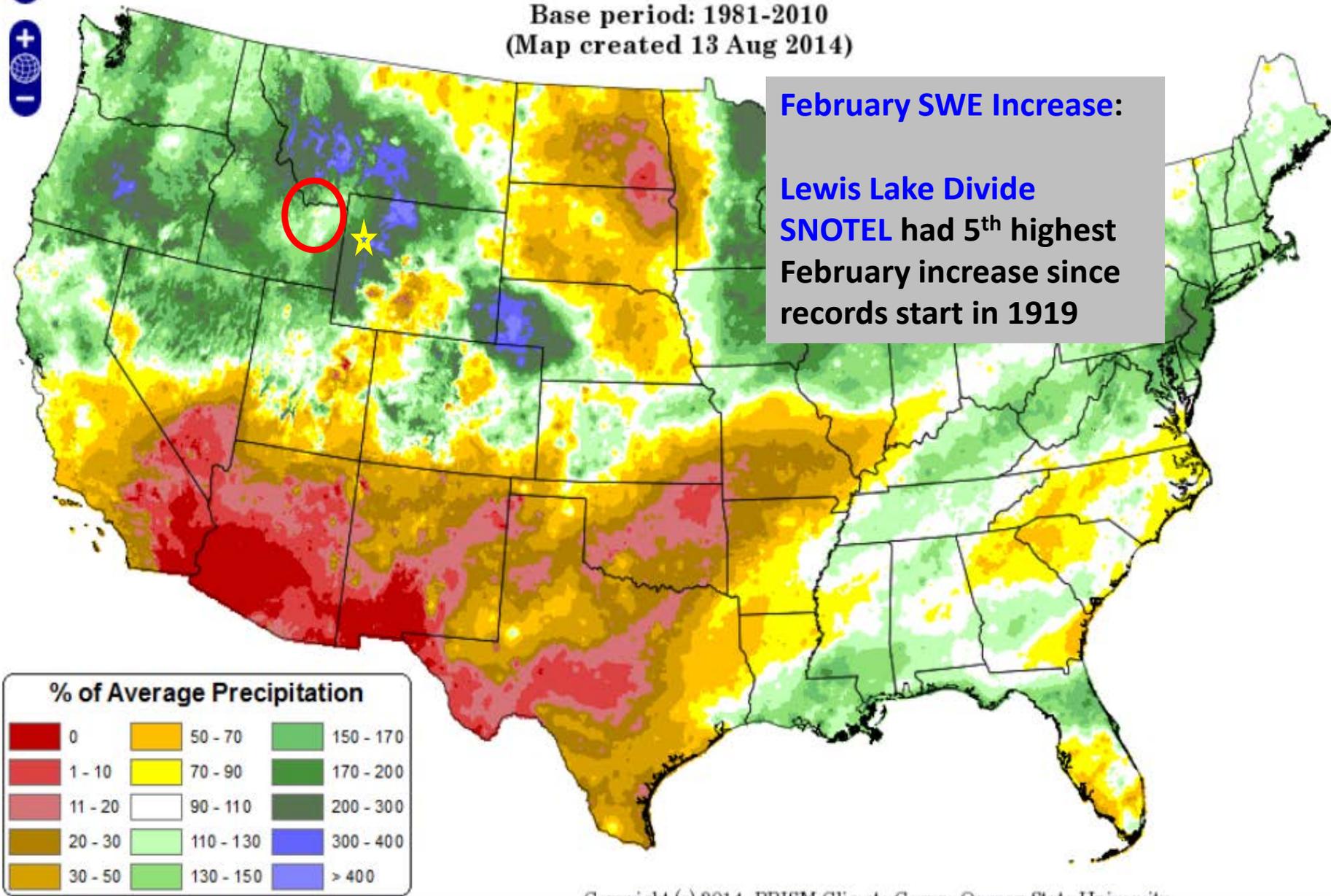
Base period: 1981-2010

(Map created 13 Aug 2014)

February SWE Increase:

Lewis Lake Divide

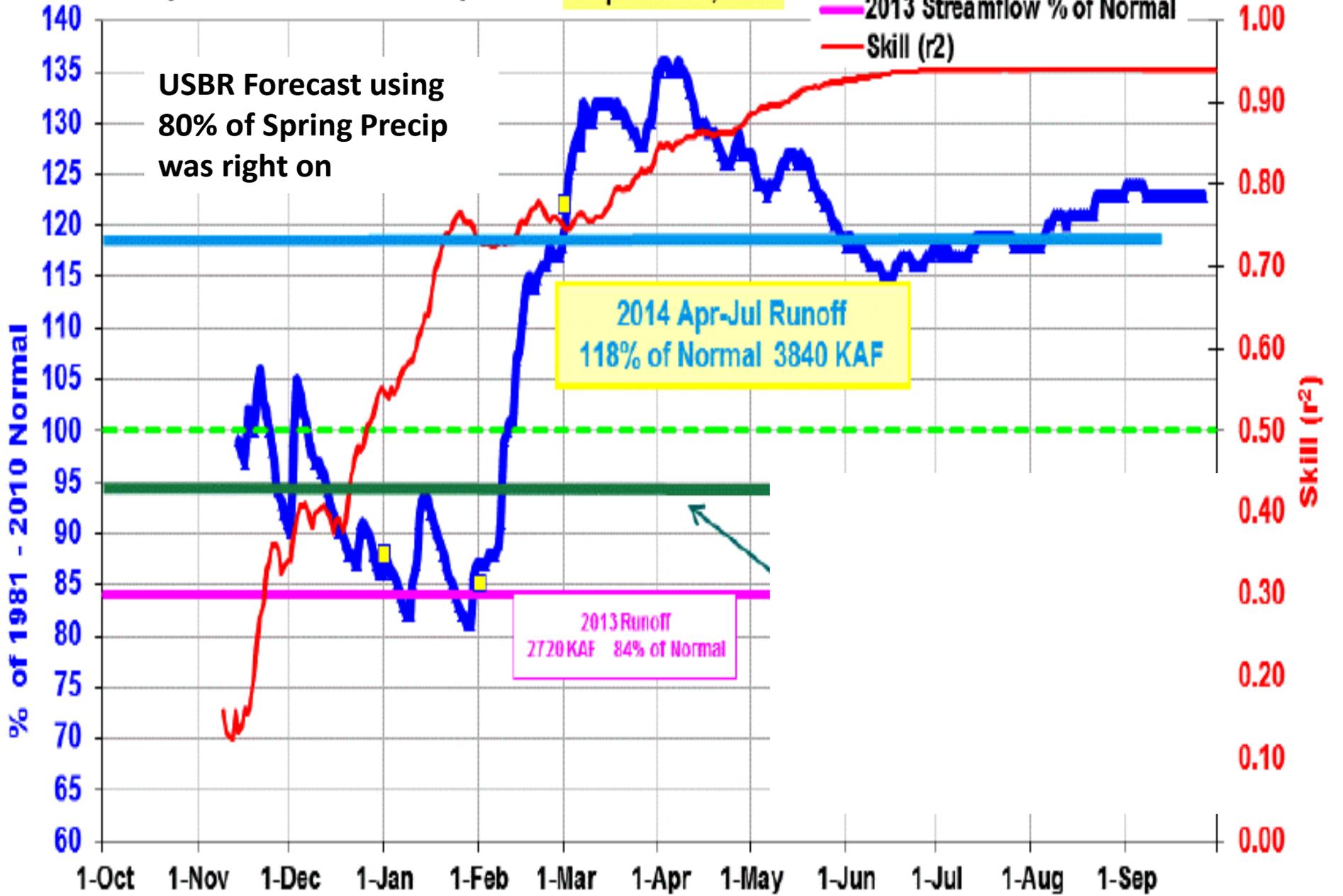
SNOTEL had 5<sup>th</sup> highest February increase since records start in 1919



2014 Snake River near Heise: Apr - Jul Volume  
NRCS Monthly Forecasts are Yellow Squares

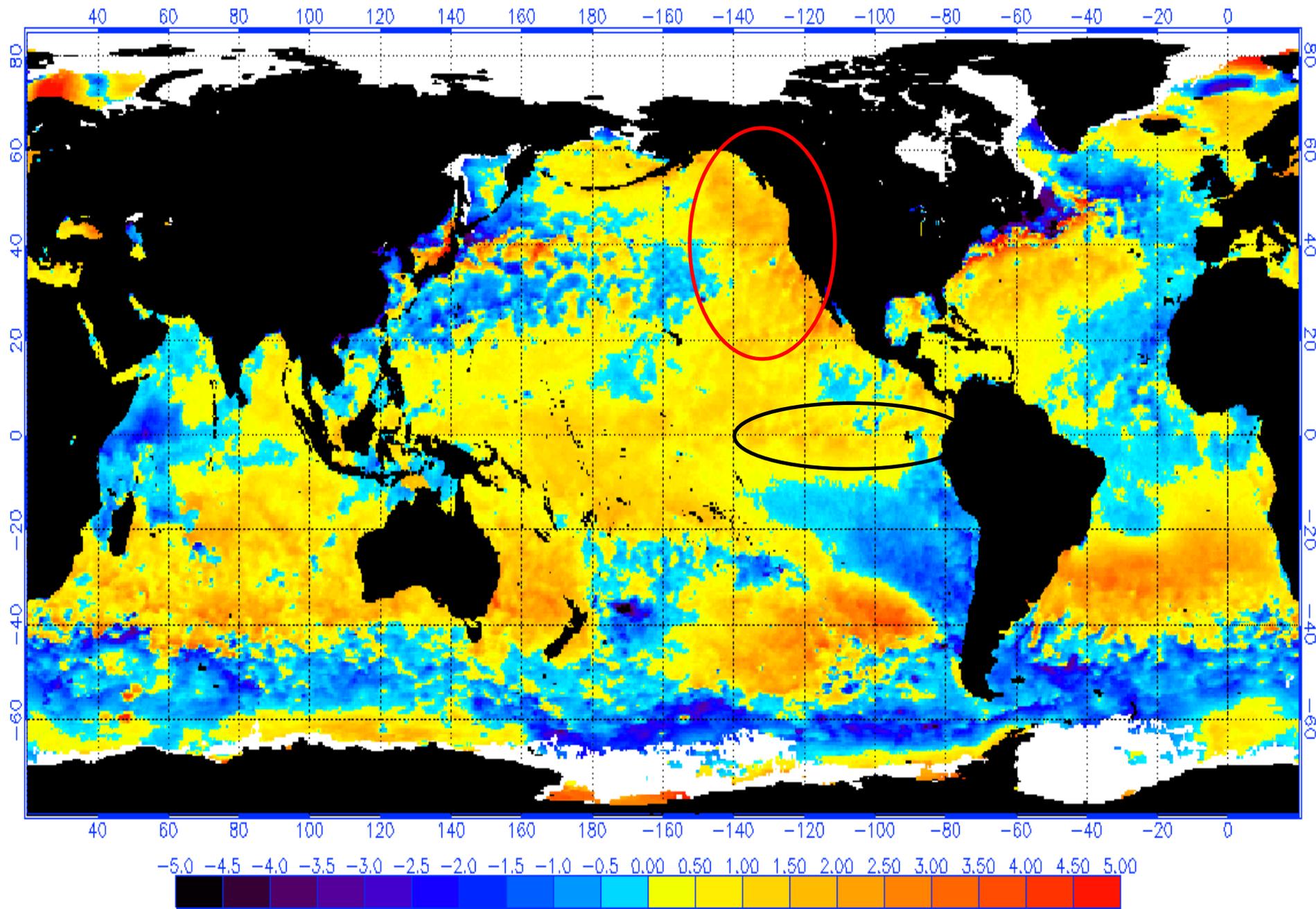
Updated  
September 26, 2014

- Daily Guidance Forecast
- Monthly Forecasts
- 2013 Streamflow % of Normal
- Skill (r<sup>2</sup>)



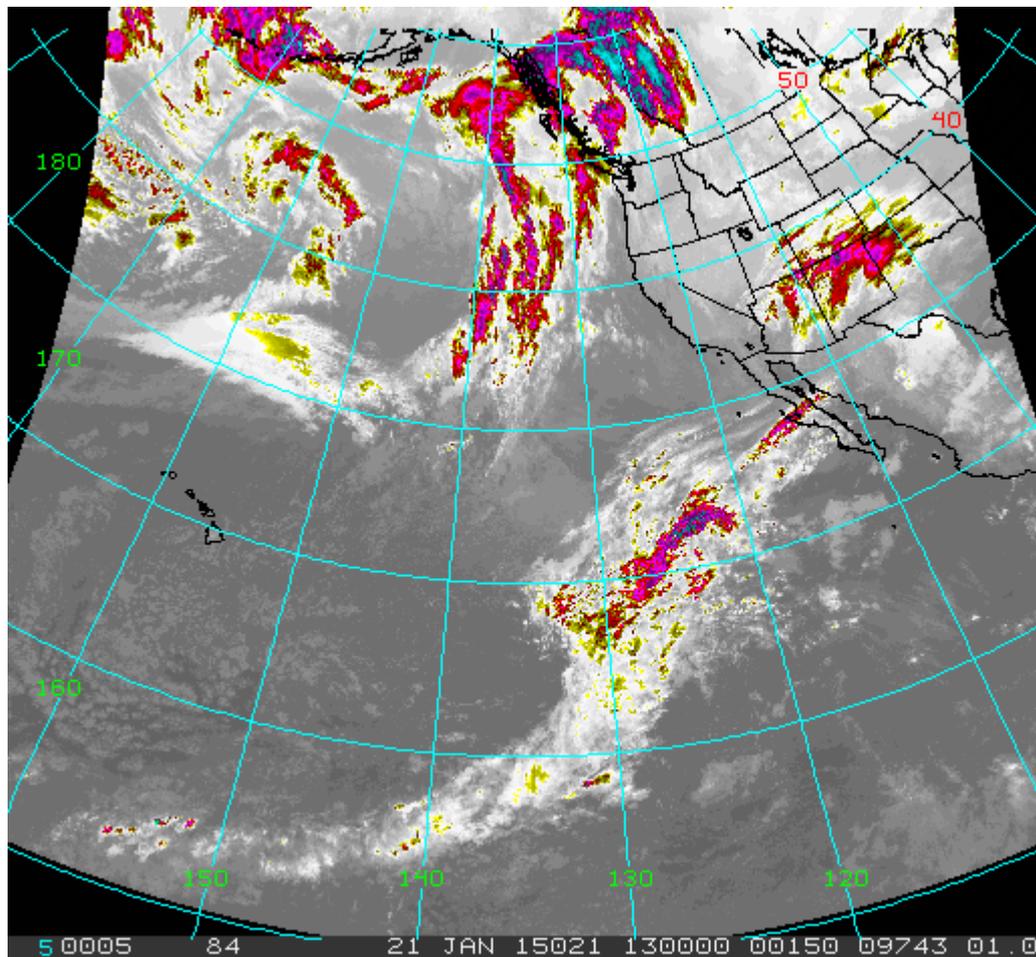
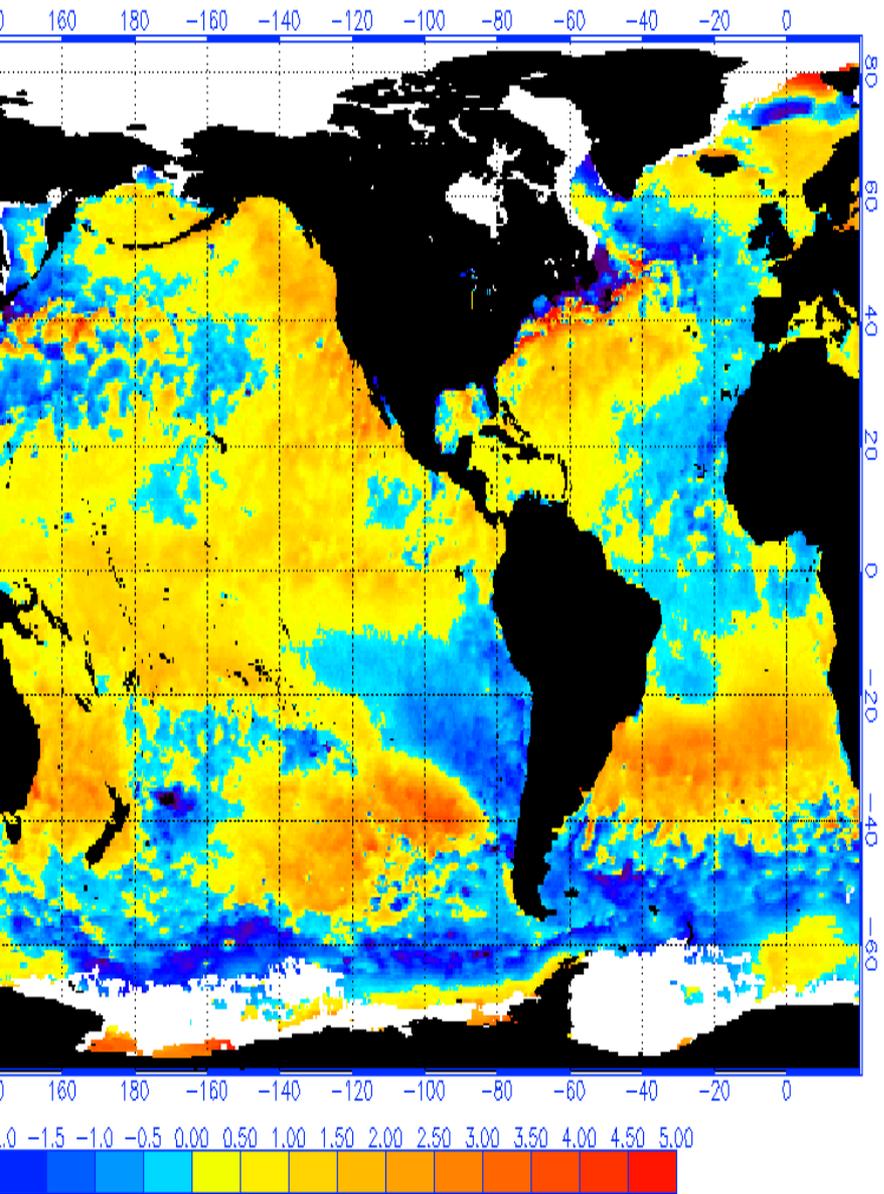
# NOAA/NESDIS 50 KM GLOBAL ANALYSIS: SST Anomaly (degrees C), 1/19/2015

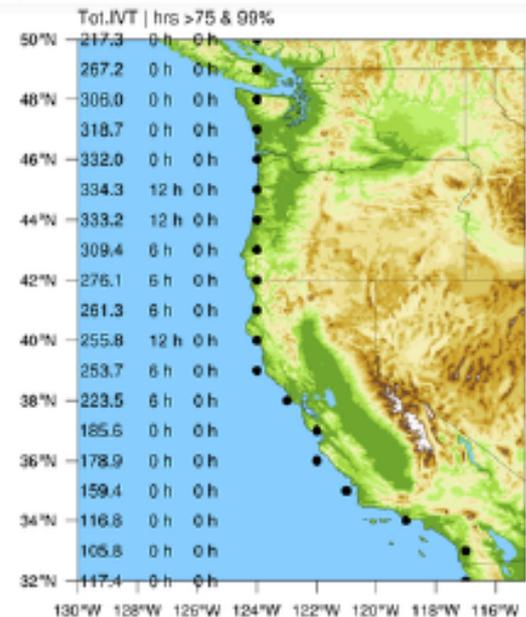
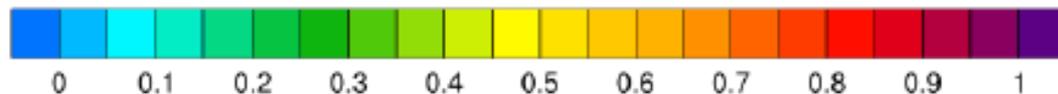
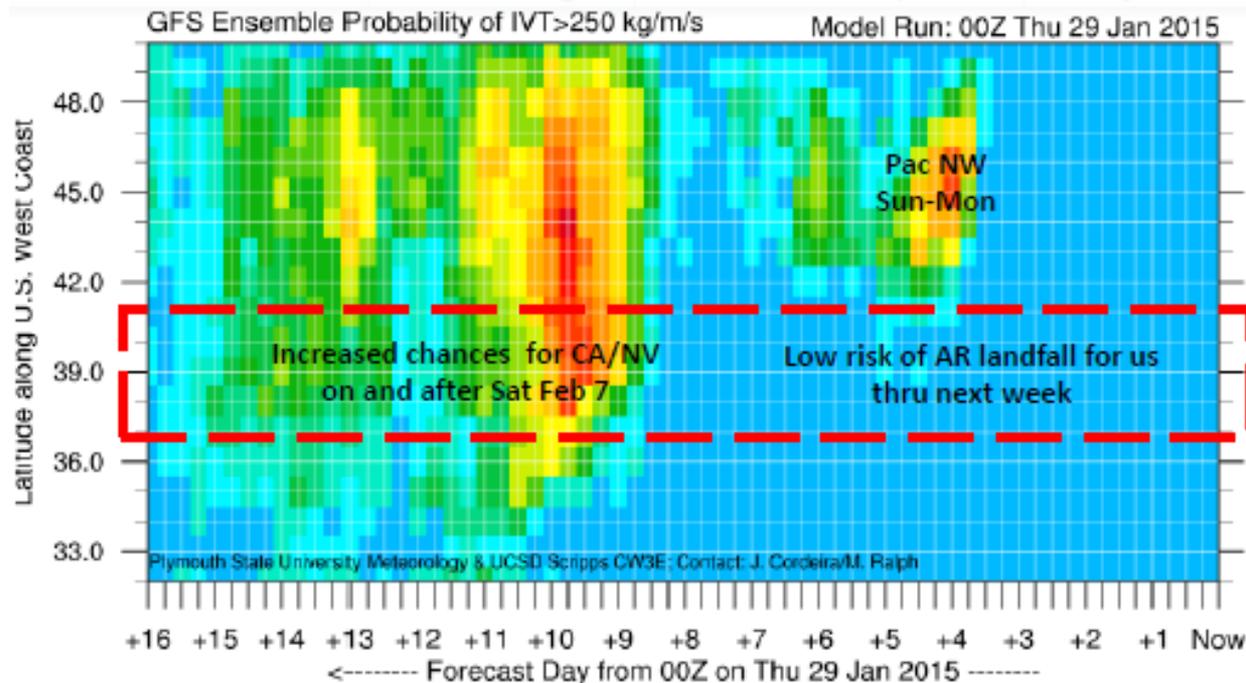
(white regions indicate sea-ice)



# GLOBAL ANALYSIS: SST Anomaly (degrees C), 1/19/2015

(white regions indicate sea-ice)





## Atmospheric River (AR) Potential – Next Two Weeks

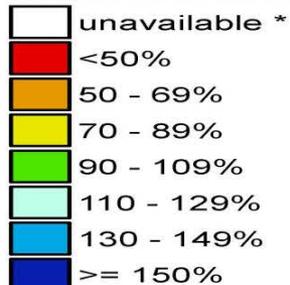
- 21 forecast simulations each with slightly different initial conditions meant to mimic chaos/uncertainty in atmosphere. Higher the number on the chart = better confidence in an AR landfall at that particular latitude. AR's often bring us our big rain/snow events.
- Not looking good for any meaningful storms through most of next week.
- Potential pattern change and AR landfall Sat/Sun next weekend, but predictability of these pattern changes this far out remains low. Could miss us to the north, but worth keeping an eye on.



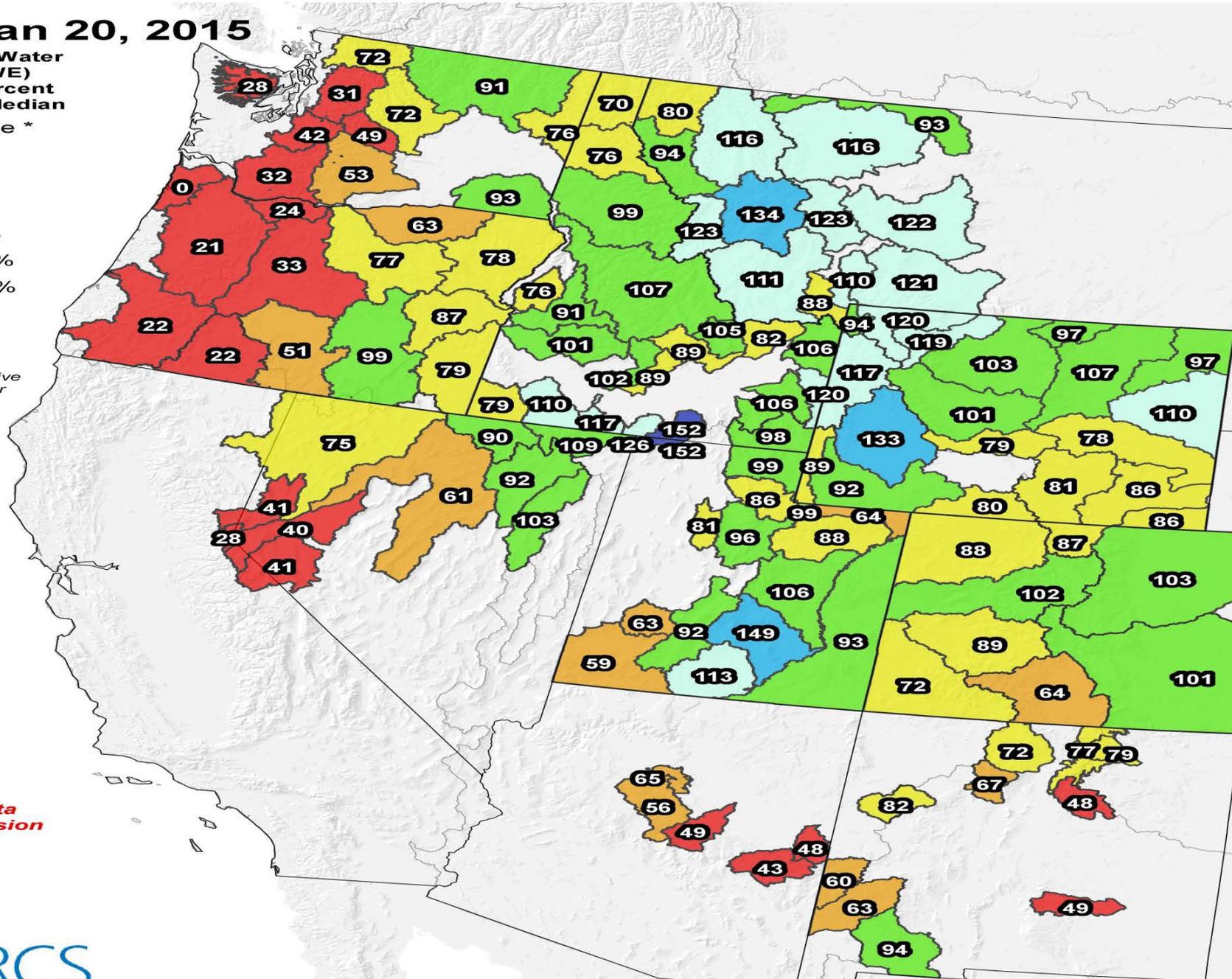
# Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal

## Jan 20, 2015

Current Snow Water Equivalent (SWE) Basin-wide Percent of 1981-2010 Median



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



Provisional data subject to revision

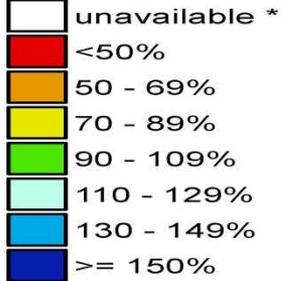


Miles

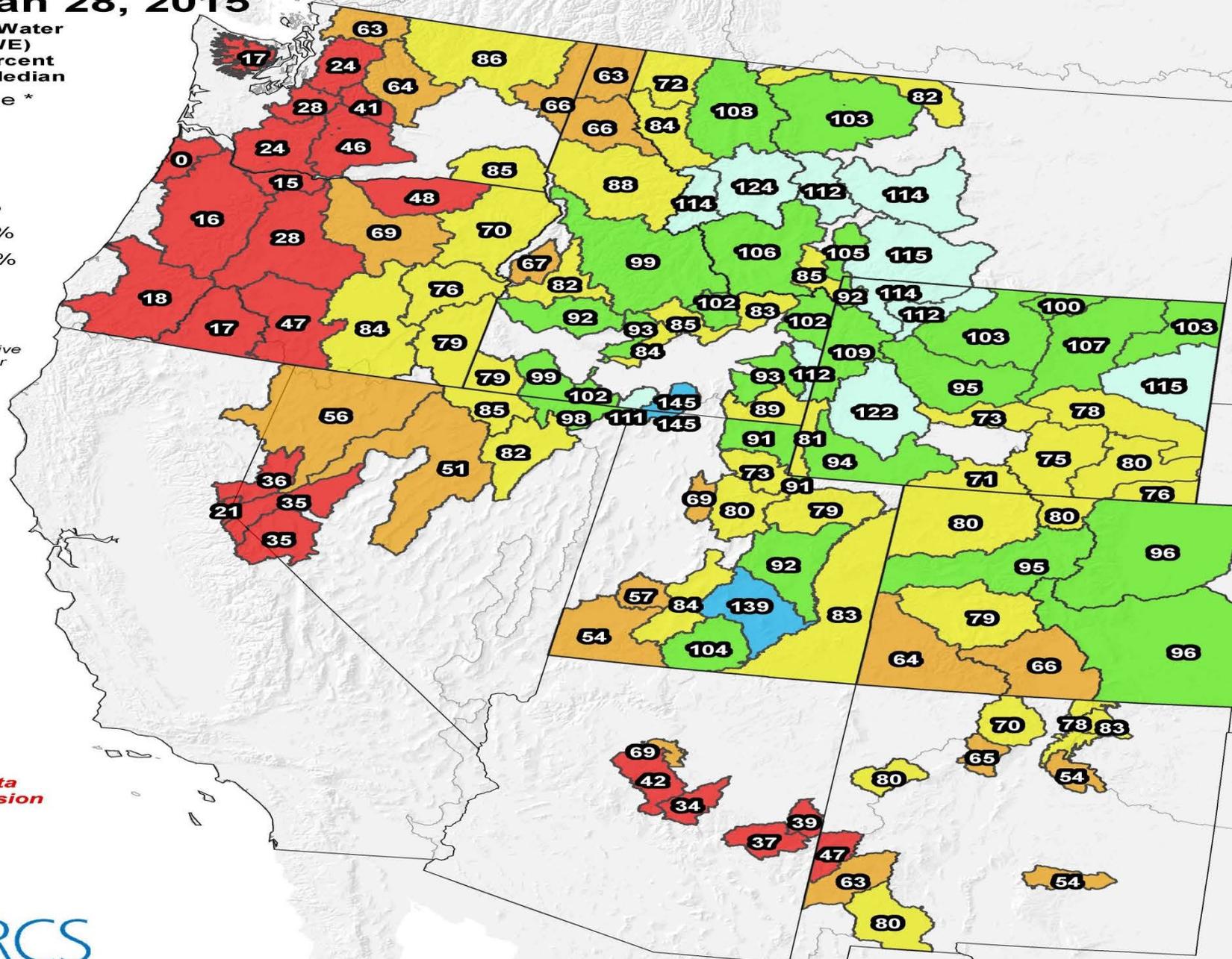
# Westwide SNOTEL Current Snow Water Equivalent (SWE) % of Normal

## Jan 28, 2015

Current Snow Water Equivalent (SWE) Basin-wide Percent of 1981-2010 Median



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



Provisional data subject to revision



Miles

# SNOTEL Current Snow Water Equivalent (SWE) Records

Jan 28, 2015

*NOTE: Until further notice, record calculations are based on period of record through water year 2012; water years 2013 and 2014 are not analyzed.*

## Current Snow Water (SWE) Equivalent Records

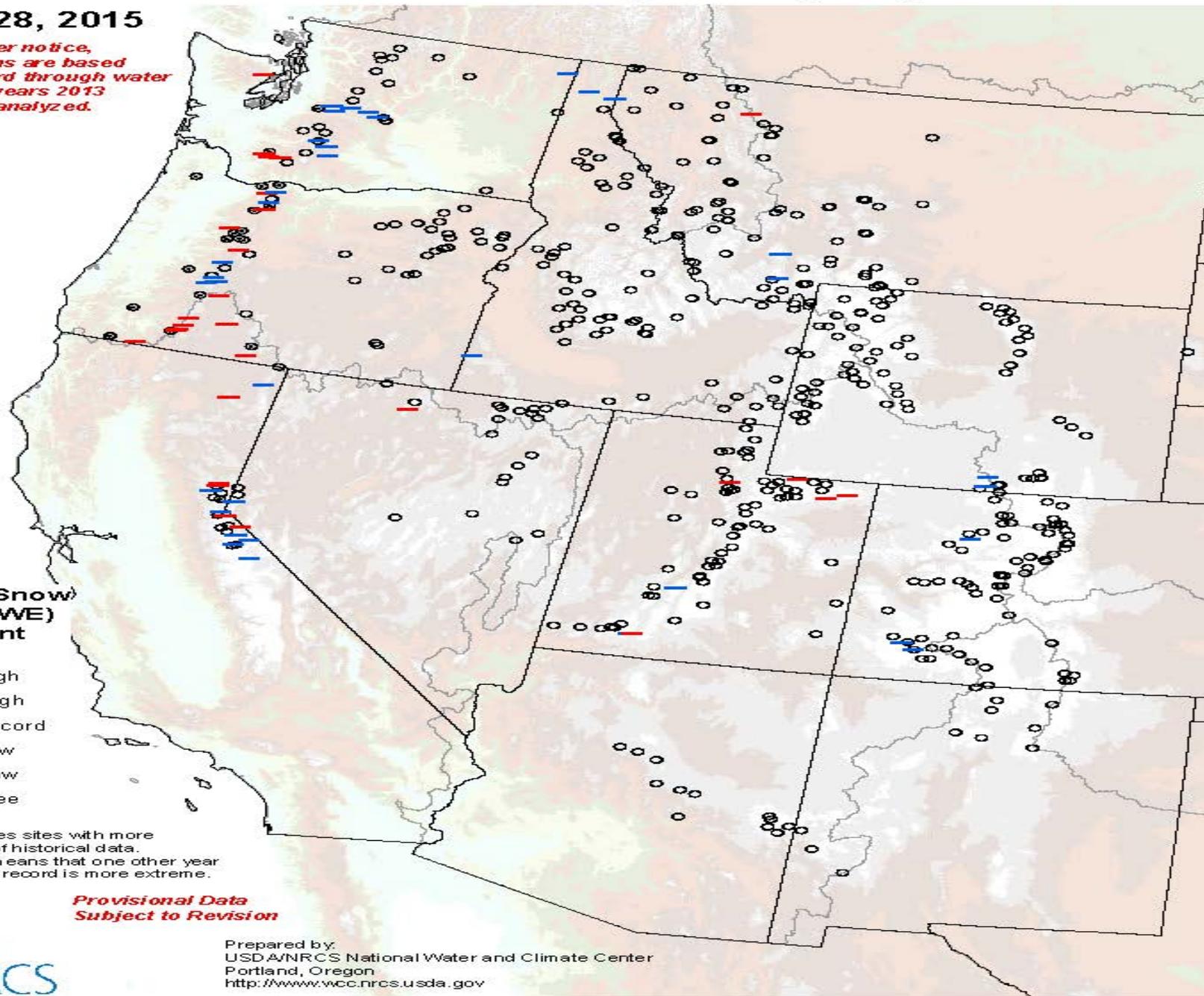
- + New High
- + Near High
- Non-Record
- New Low
- Near Low
- snow free

Analysis includes sites with more than 20 years of historical data.  
"Near" record means that one other year of the period of record is more extreme.

*Provisional Data  
Subject to Revision*



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



# SNOTEL Water Year (Oct 1) to Date Precipitation Records

Jan 28, 2015

*NOTE: Until further notice, record calculations are based on period of record through water year 2012; water years 2013 and 2014 are not analyzed.*

## Water Year (Oct 1) to Date Precipitation Records

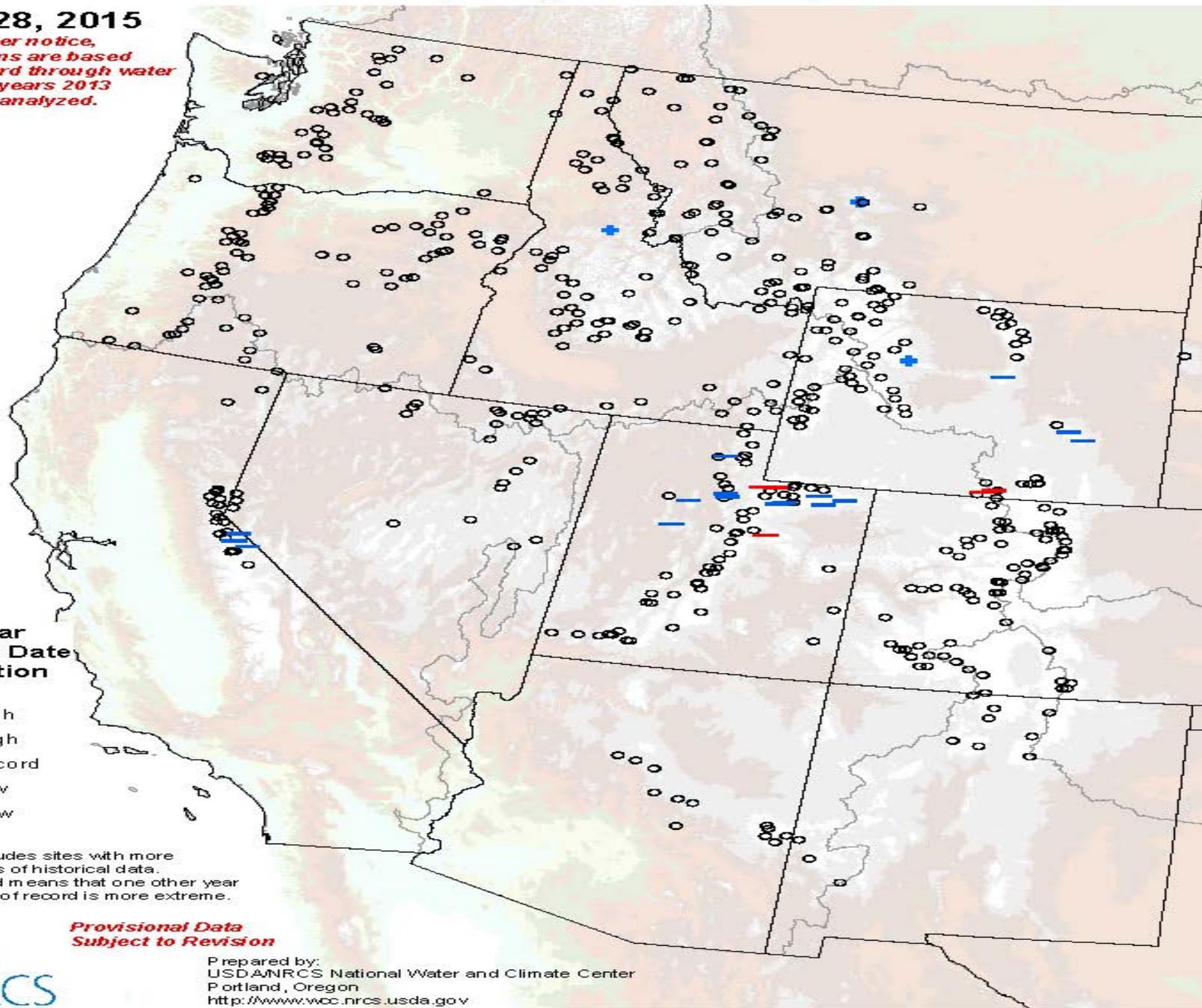
- + New High
- + Near High
- Non-Record
- New Low
- Near Low

Analysis includes sites with more than 20 years of historical data.  
'Near' record means that one other year of the period of record is more extreme.

*Provisional Data  
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Prepared by:  
USDA NRCS National Water and Climate Center  
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# SNOTEL Yesterday's Maximum Temperature Records

Jan 28, 2015

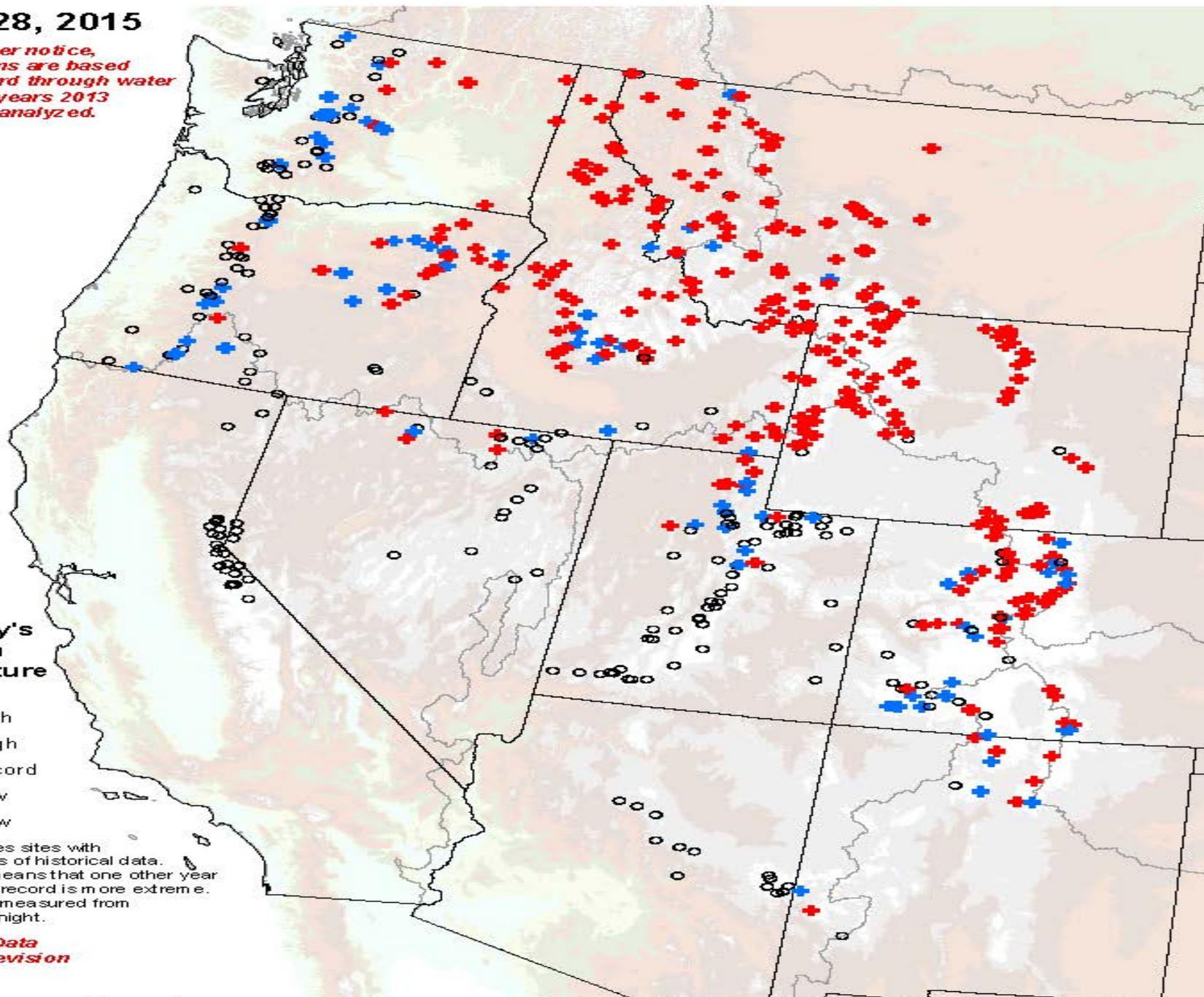
*NOTE: Until further notice, record calculations are based on period of record through water year 2012; water years 2013 and 2014 are not analyzed.*

## Yesterday's Maximum Temperature Records

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

Analysis includes sites with at least 15 years of historical data. "Near" record means that one other year of the period of record is more extreme. Temperature is measured from midnight to midnight.

*Provisional Data  
Subject to Revision*

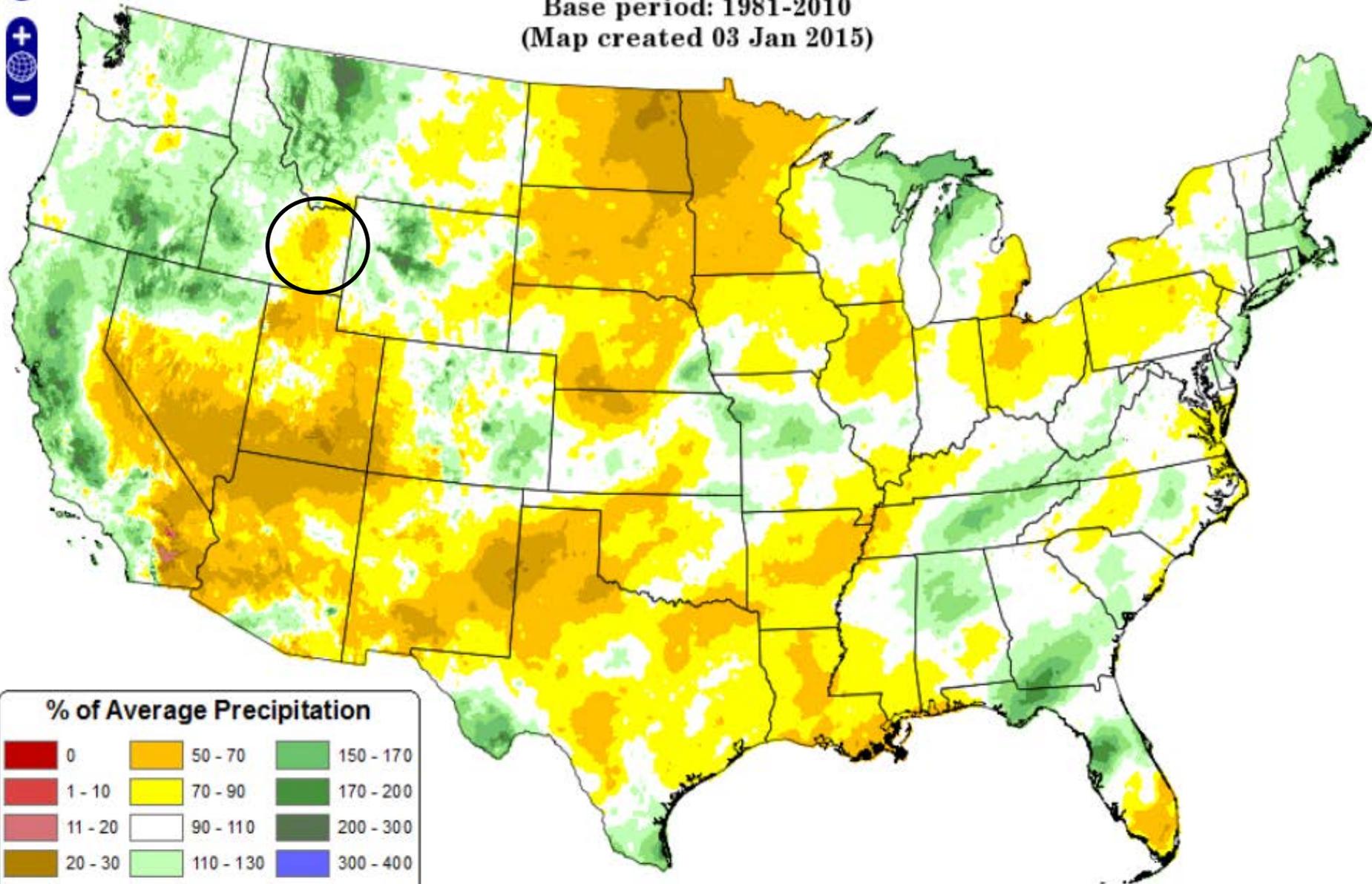


# Total Precipitation Anomaly: October 2014 - December 2014

Period ending 7 AM EST 31 Dec 2014

Base period: 1981-2010

(Map created 03 Jan 2015)

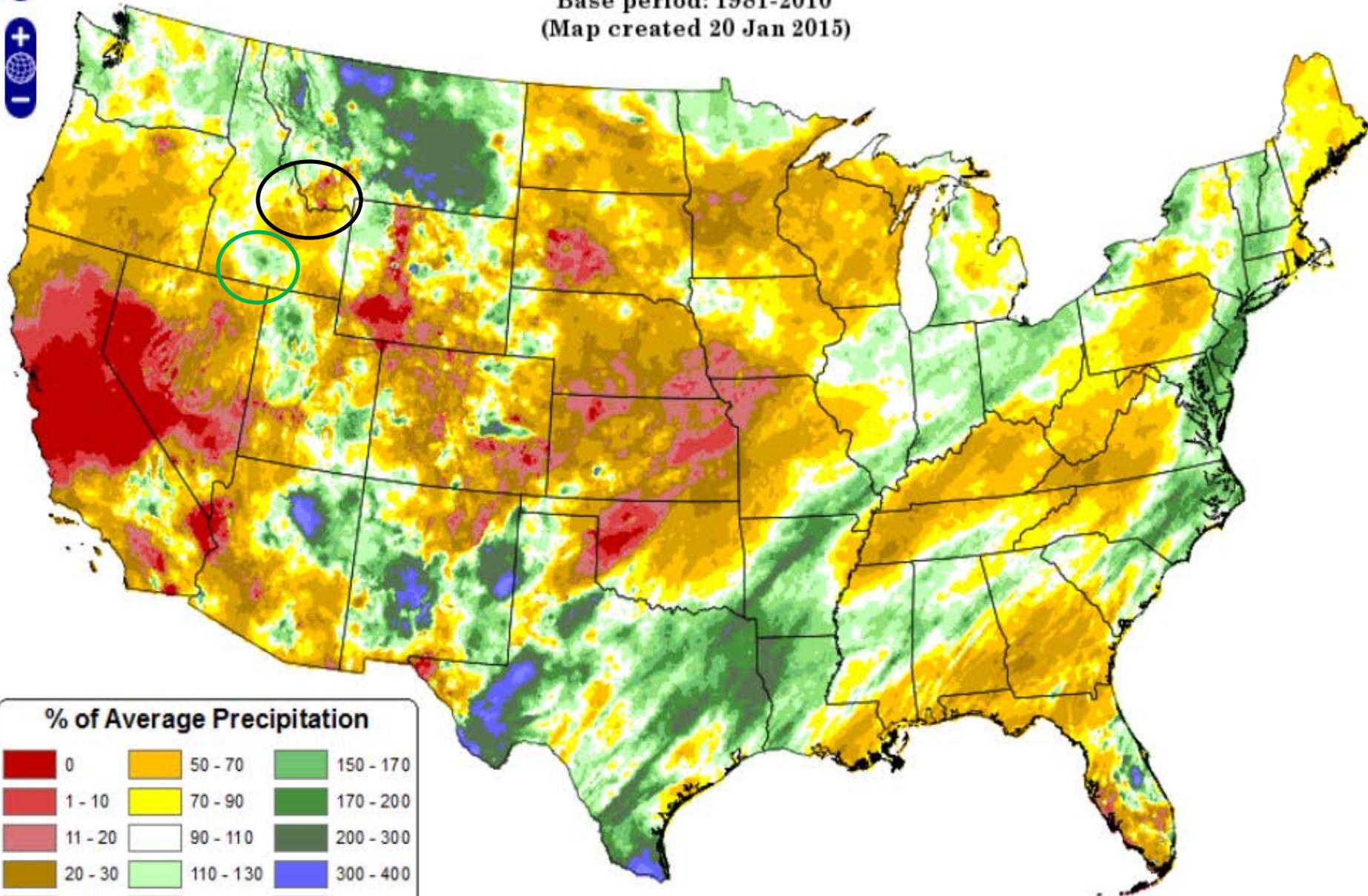


# Total Precipitation Anomaly: 01 January 2015 - 19 January 2015

Period ending 7 AM EST 19 Jan 2015

Base period: 1981-2010

(Map created 20 Jan 2015)

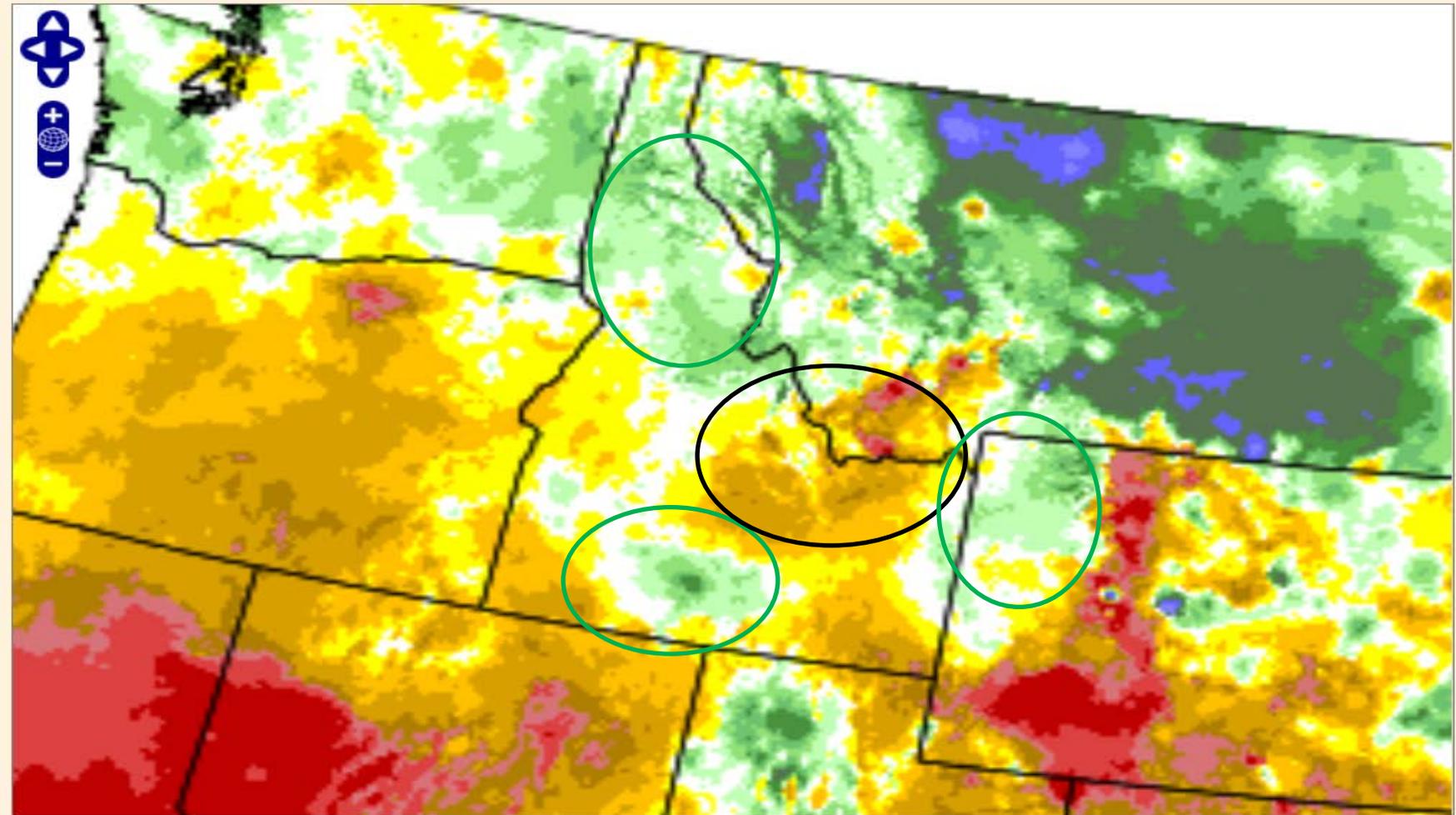


## % of Average Precipitation

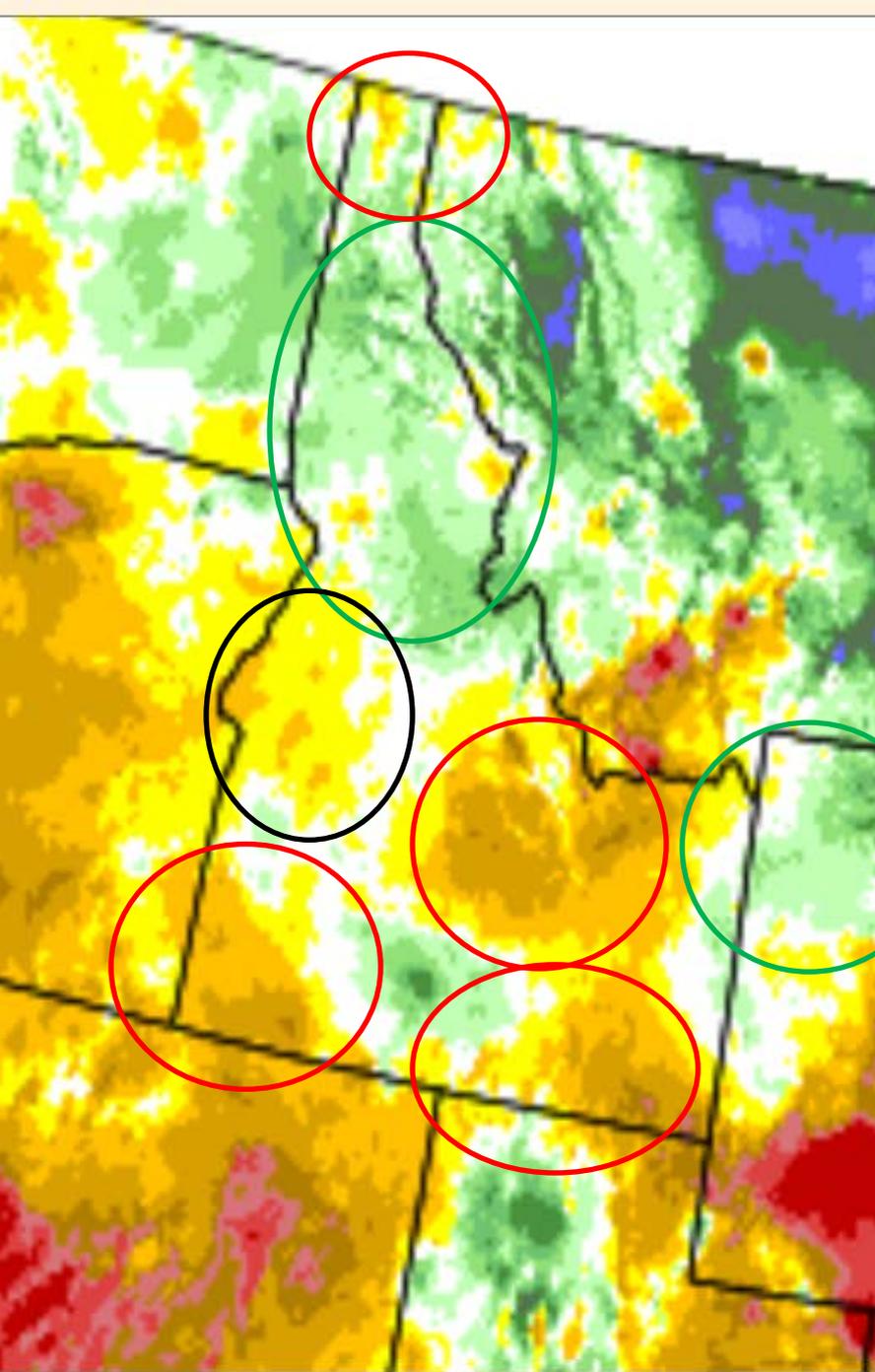
0	50 - 70	150 - 170
1 - 10	70 - 90	170 - 200
11 - 20	90 - 110	200 - 300
20 - 30	110 - 130	300 - 400
30 - 50	130 - 150	> 400



# Total Precipitation Anomaly: 01 January 2015 - 19 January 2015



% of Average Precipitation		
0	50 - 70	150 - 170
1 - 10	70 - 90	170 - 200
11 - 20	90 - 110	200 - 300
20 - 30	110 - 130	300 - 400
30 - 50	130 - 150	> 400



**SNOTEL Precipitation**  
**Jan 1 - 28 % of Monthly Total**

**Panhandle 61%**  
**Spokane, Clearwater, Salmon 70-85%**

**West Central Mnts, Big Wood 50-65%**

**Little Wood Big Lost 35-40%**

**Upper Snake 70-75%**

**Across Southern Idaho**  
**From low to high**

**Owyhee 41% to Oakley 52%**  
**Bear, Bruneau, Willow,**  
**Blackfoot, Salmon Falls,**

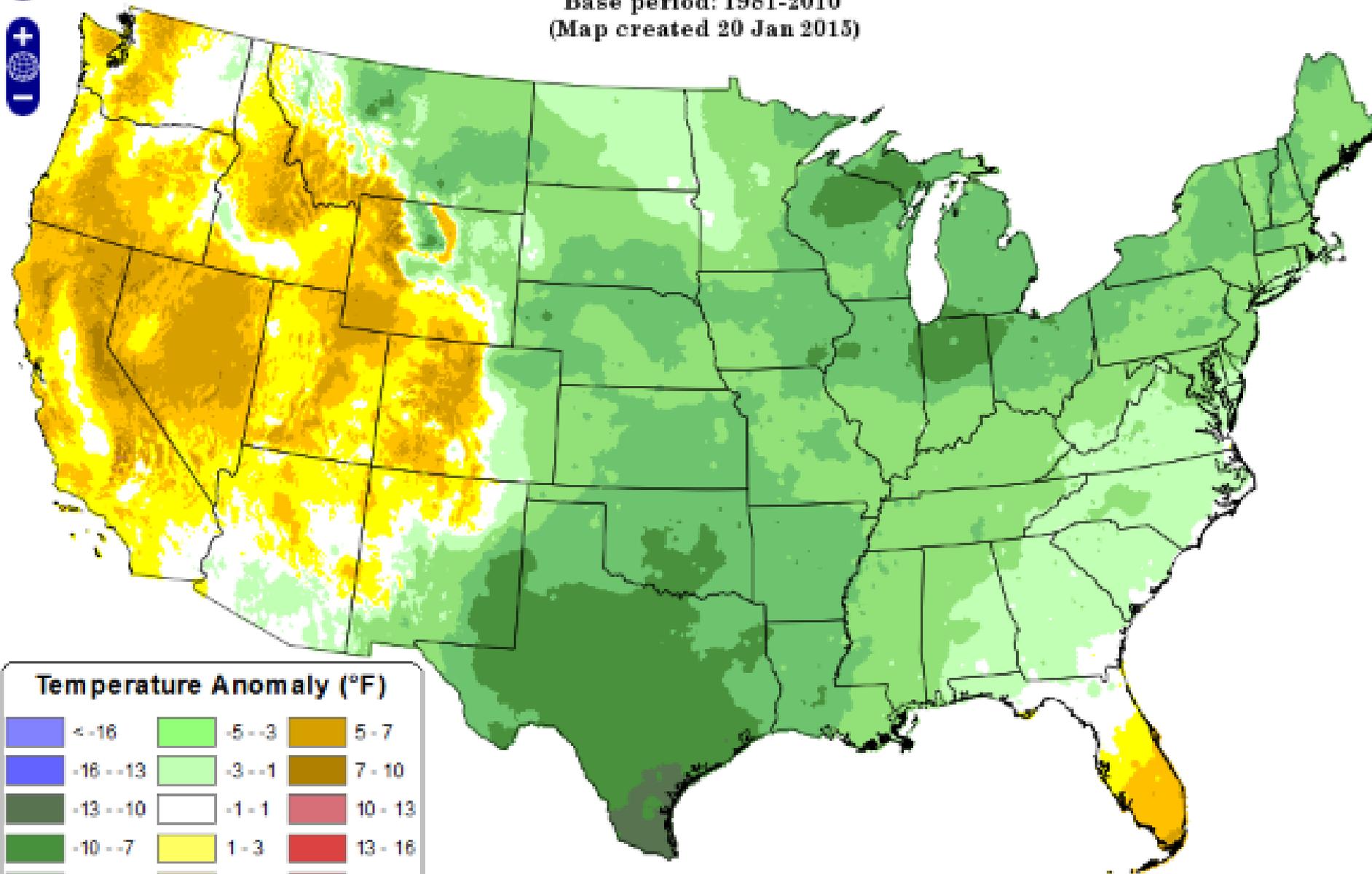


# Daily Mean Temperature Anomaly: 01 January 2015 - 19 January 2015

Period ending 7 AM EST 19 Jan 2015

Base period: 1981-2010

(Map created 20 Jan 2015)



## Temperature Anomaly (°F)

 < -16	 -5 - -3	 5 - 7
 -16 - -13	 -3 - -1	 7 - 10
 -13 - -10	 -1 - 1	 10 - 13
 -10 - -7	 1 - 3	 13 - 16
 -7 - -5	 3 - 5	 > 16

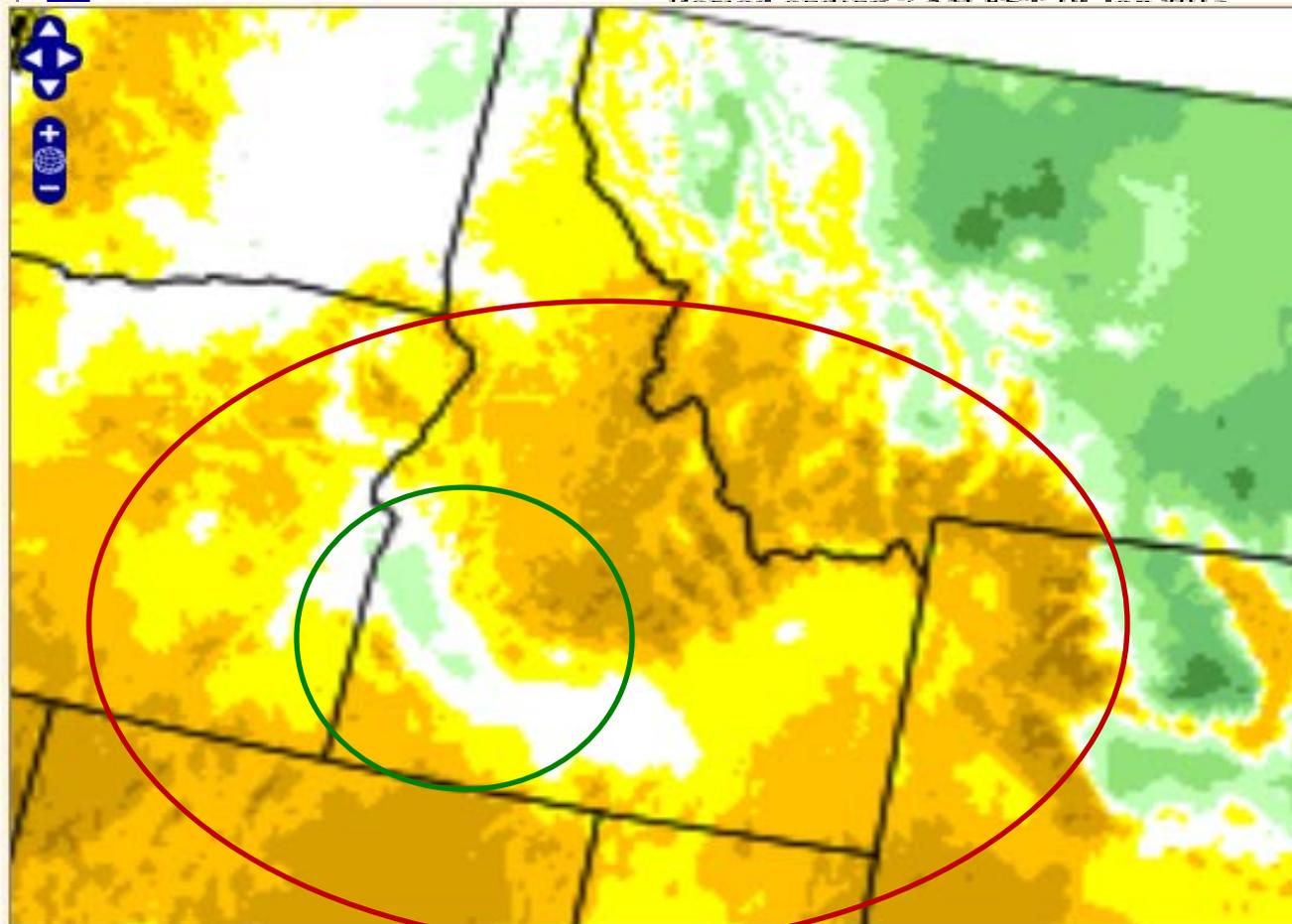


# Daily Mean Temperature Anomaly: 01 January 2015 - 19 January 2015

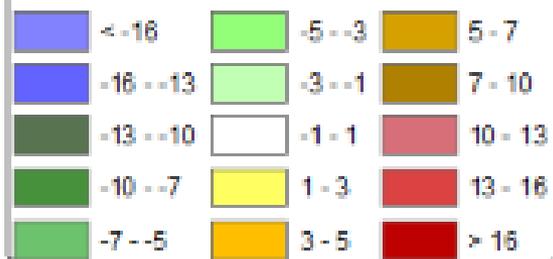
Revised edition 2 August 2016, 10:15 AM PST

**Don't let the valley fog fool you... it's warm in those mountains, 3-7 F above normal**

**Snow Densities higher than normal from temps & rain**

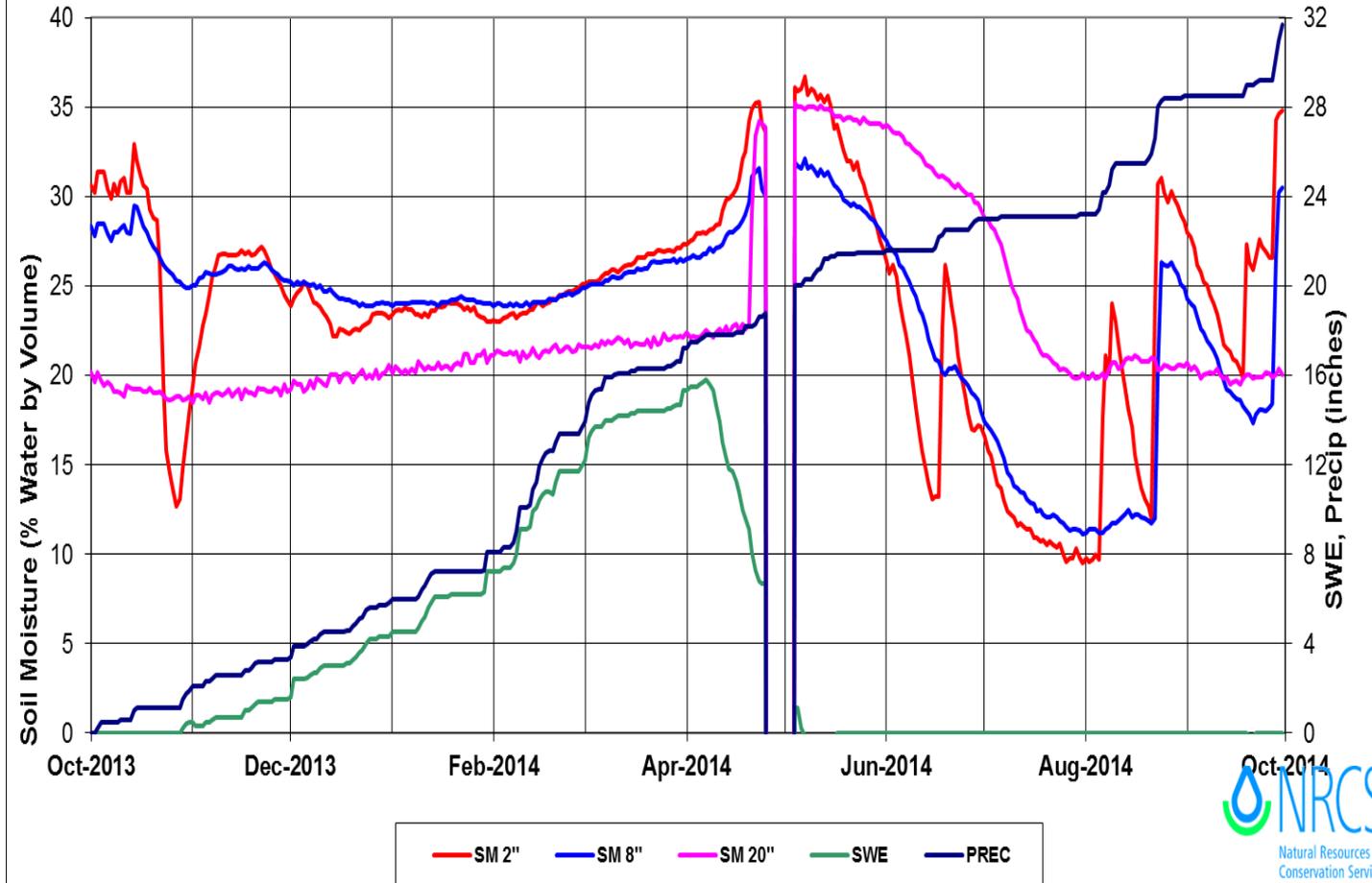


Temperature Anomaly (°F)

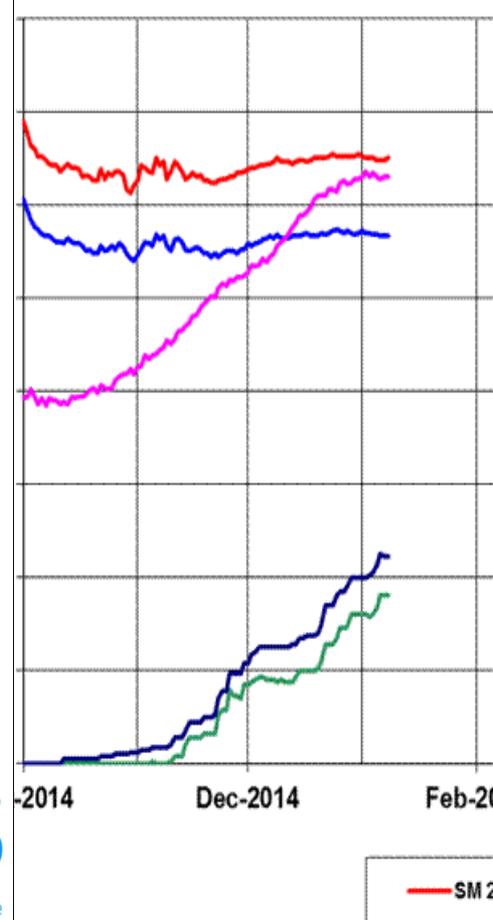


# Some Good News! Soil Moisture Eastern Idaho near Grays Lake

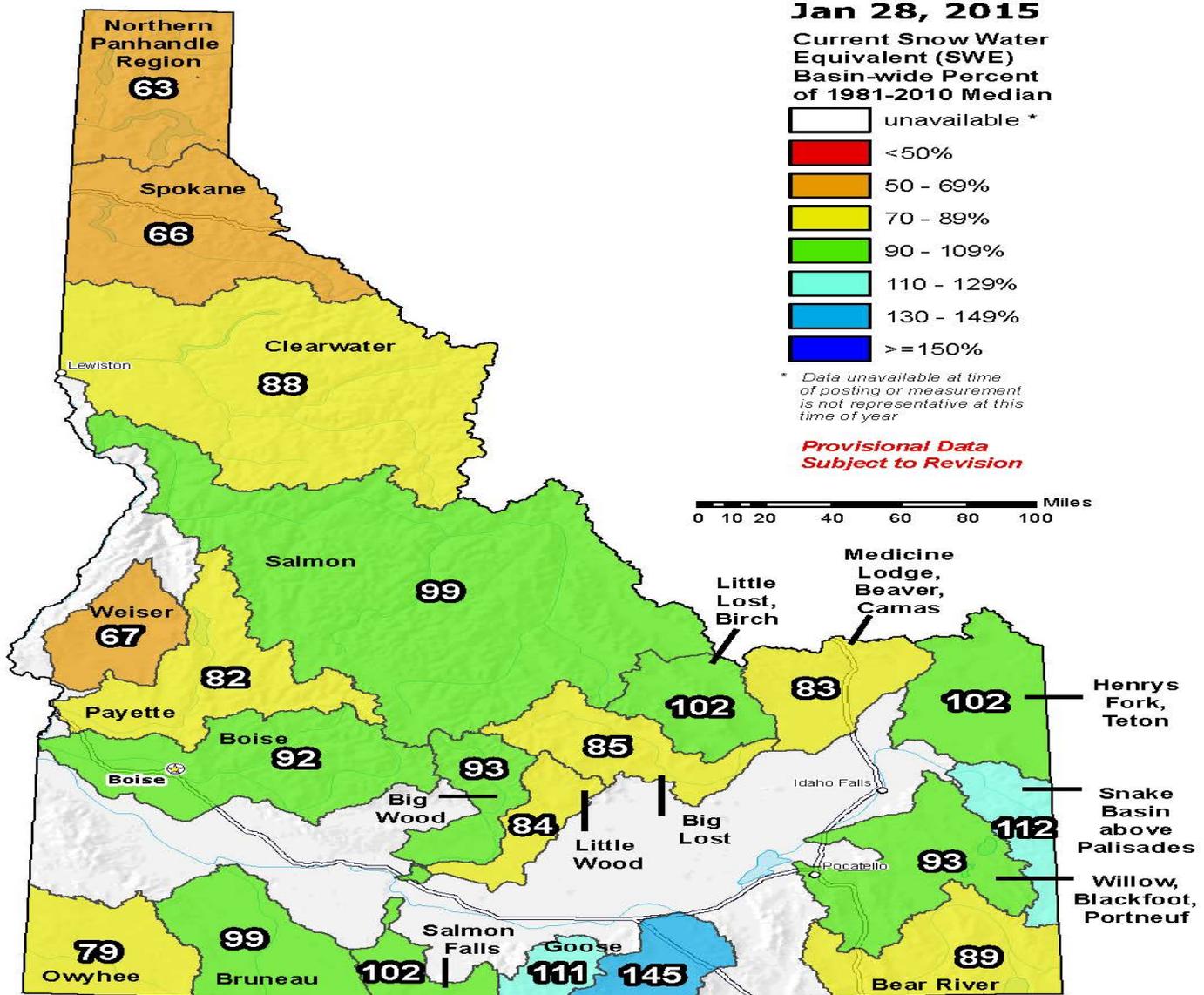
Somsen Ranch Soil Moisture - Water Year 2014



Somsen Ra



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

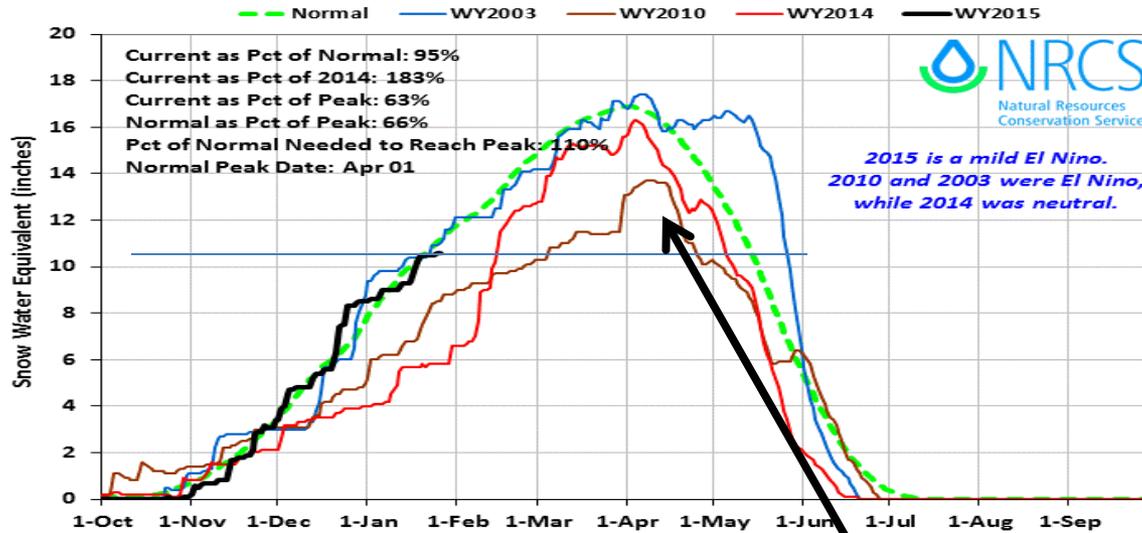


The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).

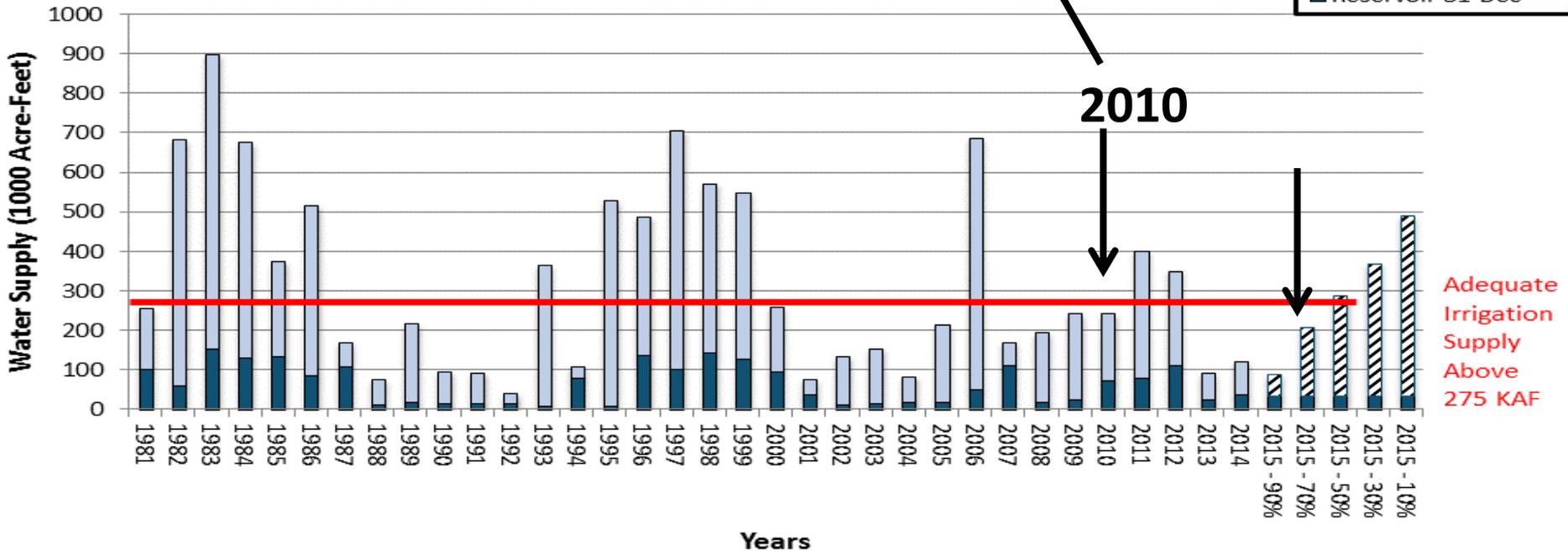
Prepared by:  
 USDA/NRCS National Water and Climate Center  
 Portland, Oregon  
<http://www.wcc.nrcs.usda.gov>

### Big Wood Basin 2015 Snowpack Comparison Graph (9 sites)

Based on Provisional SNOTEL data as of Jan 26, 2015



### Jan 1 Historic and Forecasted Surface Water Supply Big Wood River Basin



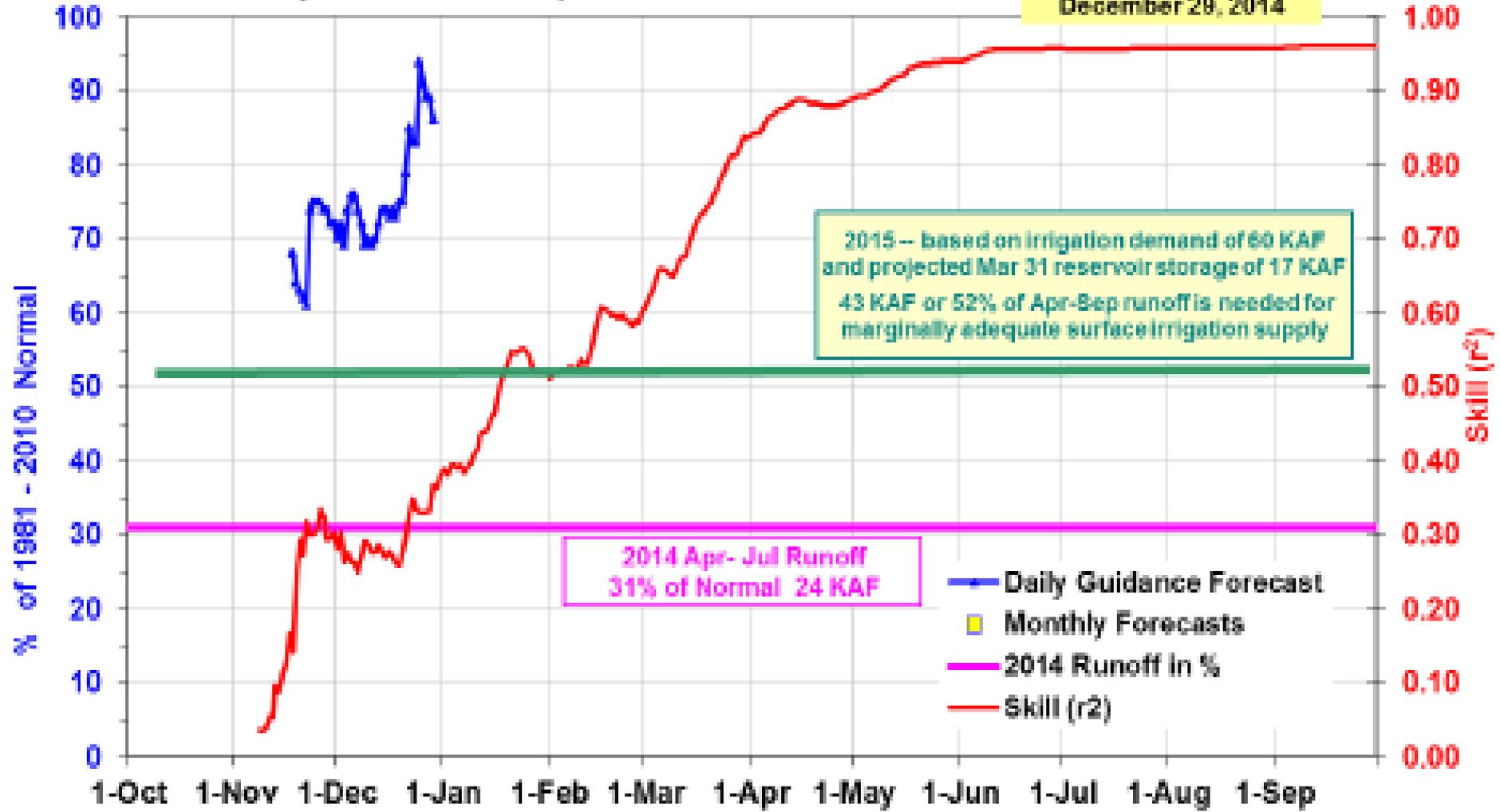
# **Big Wood Basin**

- **Need for lower elevation snow site in lower valley ---- Greenhorn Gulch area**
- **Reservoir Operating Guide is current**
- **BSU project to update Snow to Flow Relationships to monitor peak flows**

2015 Little Wood River near Carey: Apr - Jul Volume  
 NRCS Monthly Forecasts are Squares



Updated  
 December 29, 2014



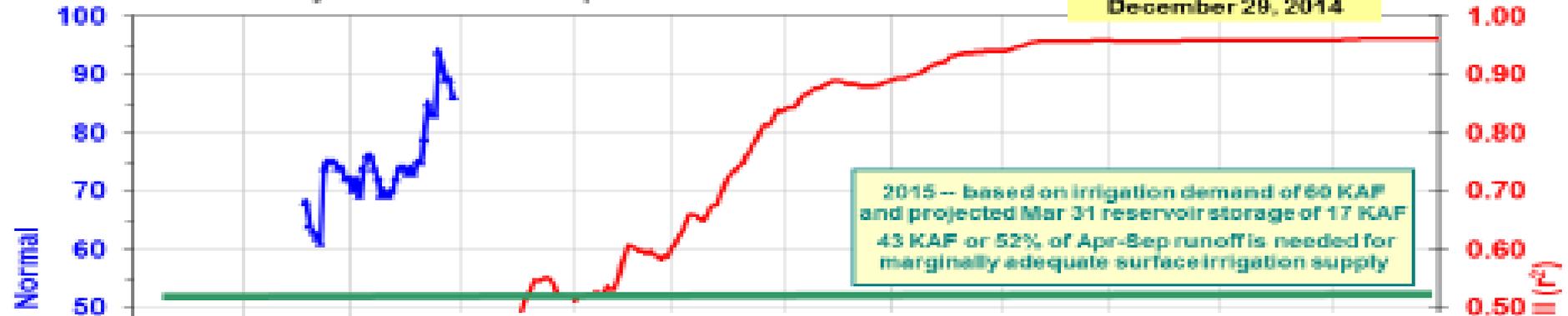
2015 -- based on irrigation demand of 60 KAF and projected Mar 31 reservoir storage of 17 KAF  
 43 KAF or 52% of Apr-Sep runoff is needed for marginally adequate surface irrigation supply

2014 Apr- Jul Runoff  
 31% of Normal 24 KAF

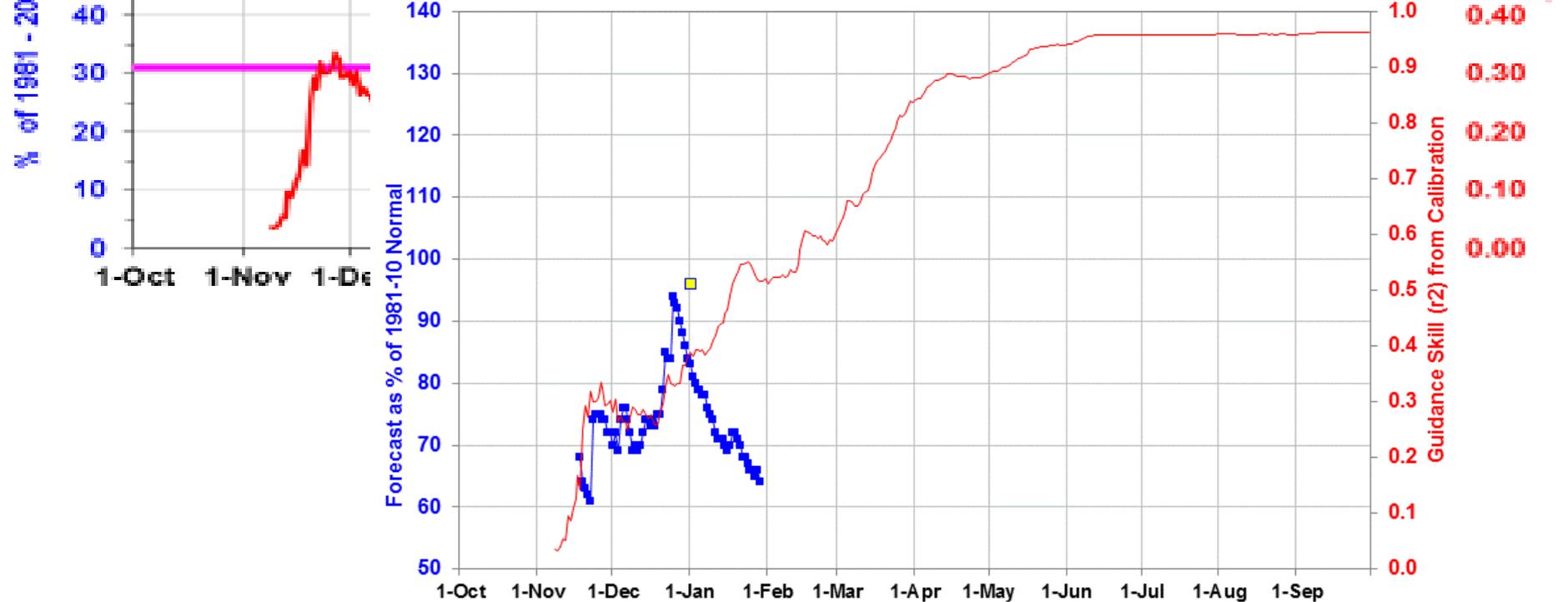
- Daily Guidance Forecast
- Monthly Forecasts
- 2014 Runoff in %
- Skill (r<sup>2</sup>)

2015 Little Wood River near Carey: Apr - Jul Volume  
NRCS Monthly Forecasts are Squares

Updated  
December 29, 2014



Created 7:07 Jan 29 2015 Little Wood River nr Carey (ID): Apr-Jul Volume



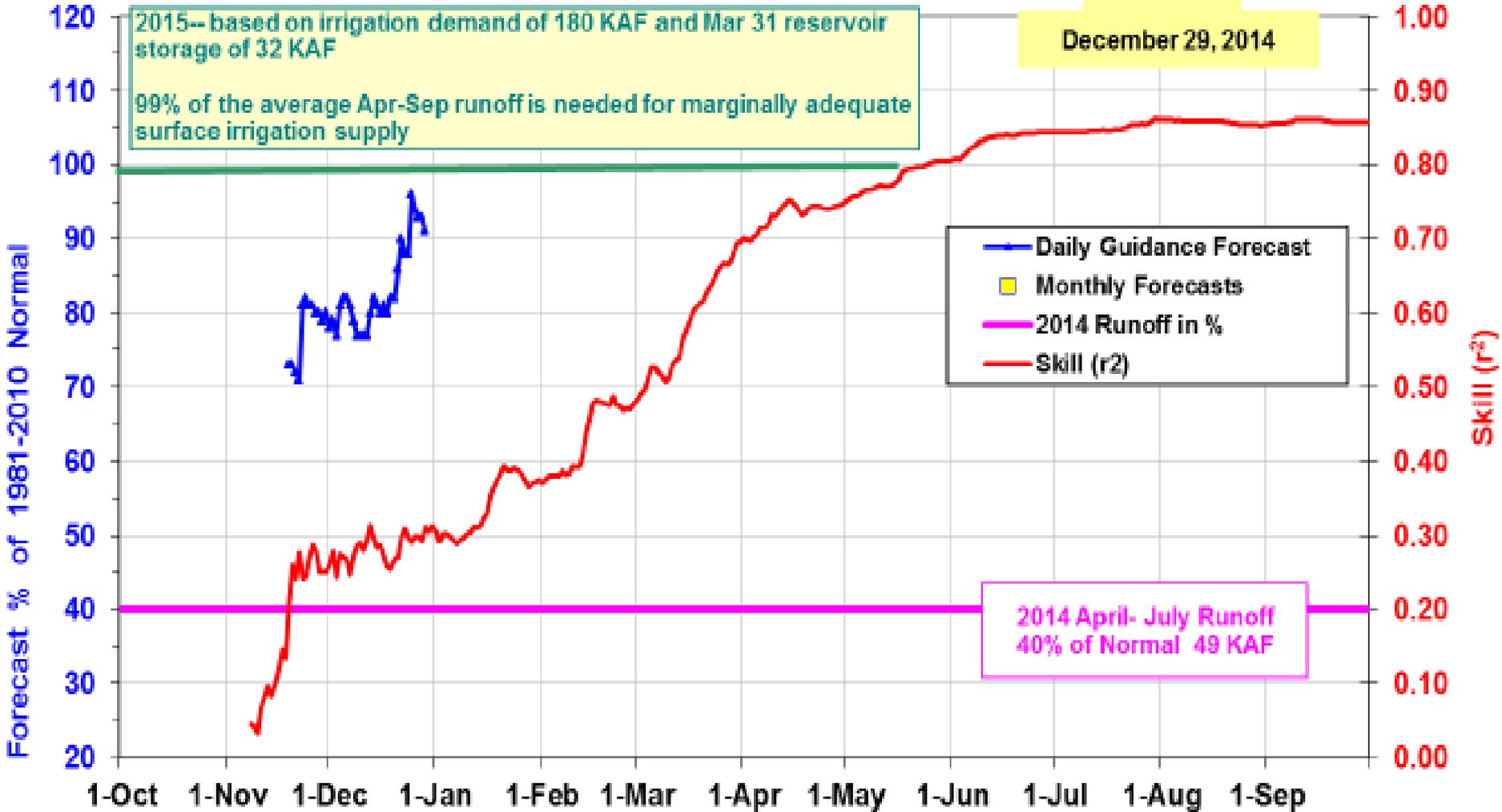
- Guidance fcst % norm
- Official fcst % norm
- Guidance Skill (r<sup>2</sup>)

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. Skill is defined as the correlation (squared) between the guidance and observed during calibration. 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: Cara.s.McCarthy@por.usda.gov www.wcc.nrcs.usda.gov/wsf/daily\_forecasts.html

# **Little Wood / Big Little Lost Basins**

- **Interest and possible funding for site in Fish Creek area/Antelope basin – Iron Mine snow course**
- **Mackay Reservoir Operating needs updating**
- **BSU project to update Snow to Flow Relationships to monitor peak flows**
- **Little Lost - interest in high elevation site**

# 2015 Big Lost River below Mackay Resv: Apr-Jul Percent of Normal NRCS Monthly Forecasts are Squares



# 2015 Big Lost River below Mackay Resv: Apr-Jul Percent of Normal

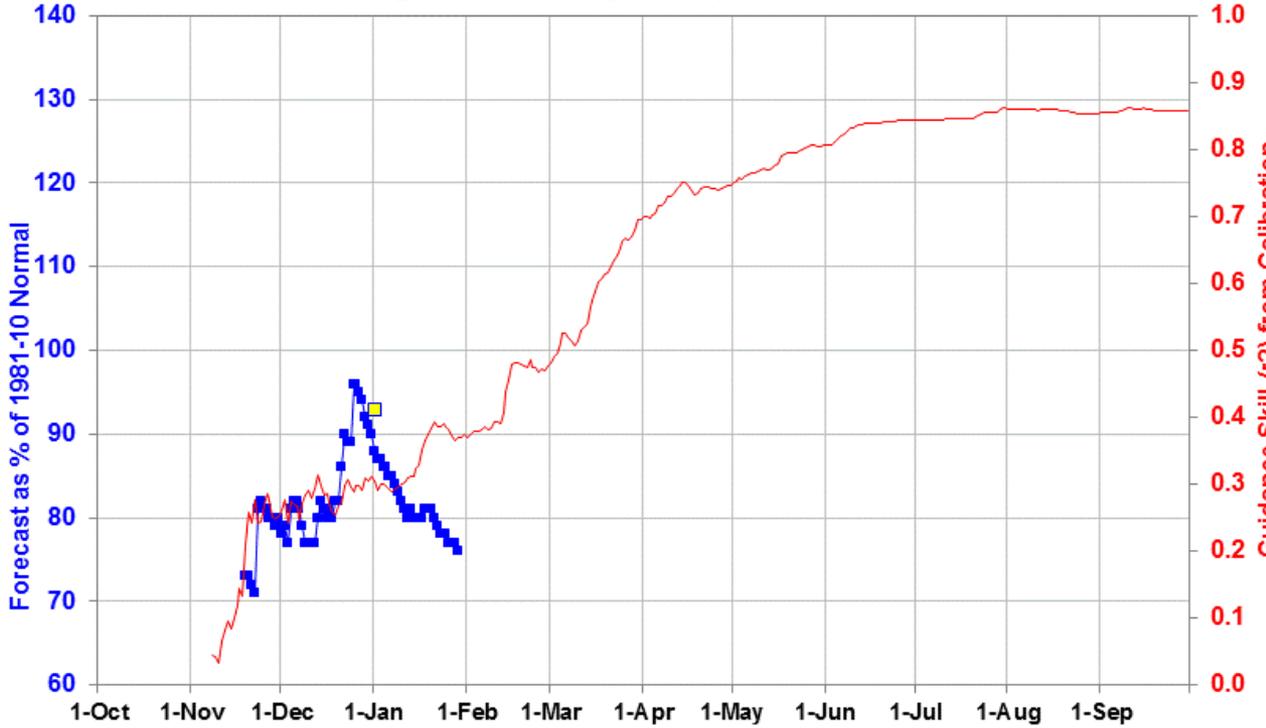
## NRCS Monthly Forecasts are Squares



Forecast % of 1981-2010 Normal

Created 7:07 Jan 29 2015

Big Lost R bl Mackay Res (ID): Apr-Jul Volume

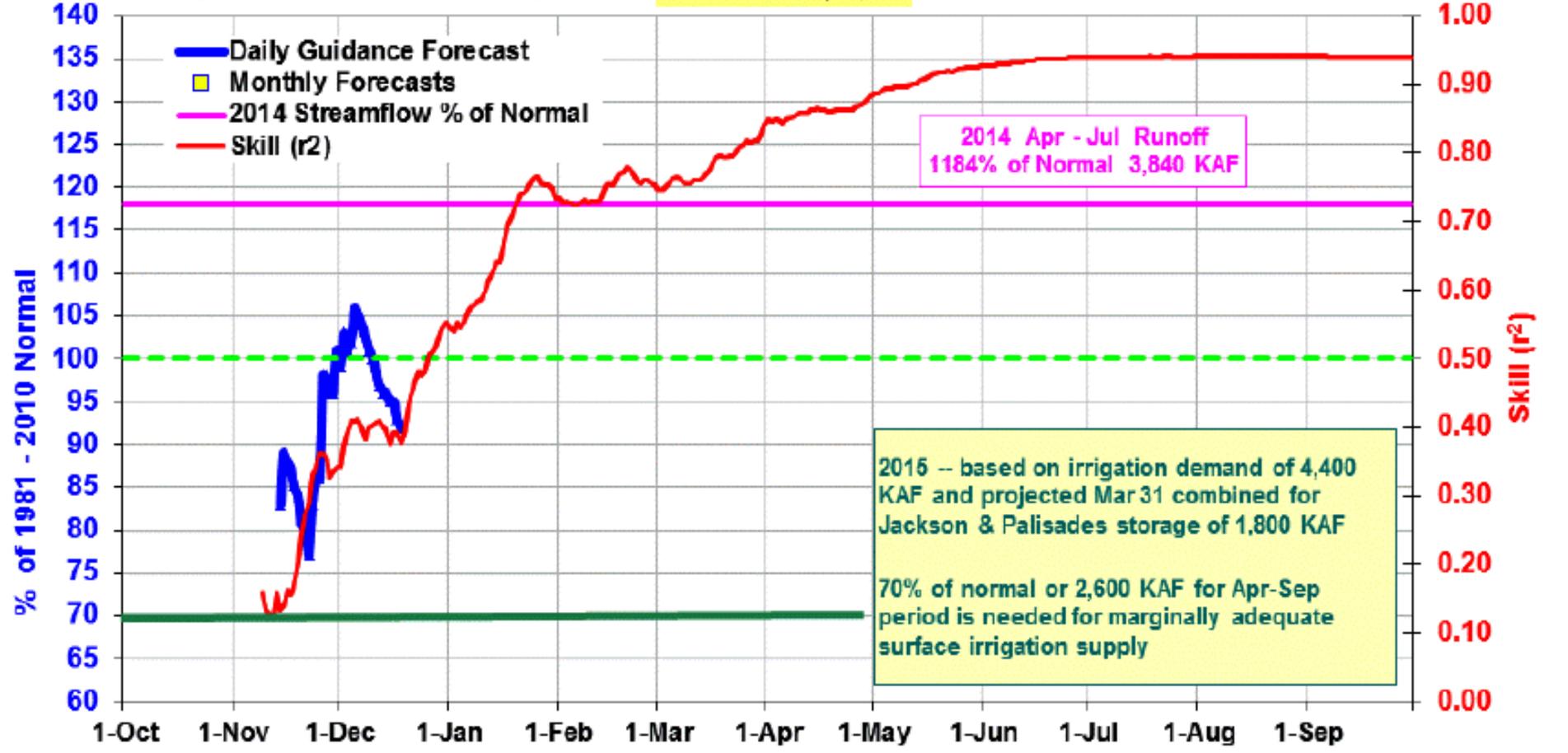


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# 2015 Snake River near Heise: Apr - Jul Volume NRCS Monthly Forecasts are Yellow Squares

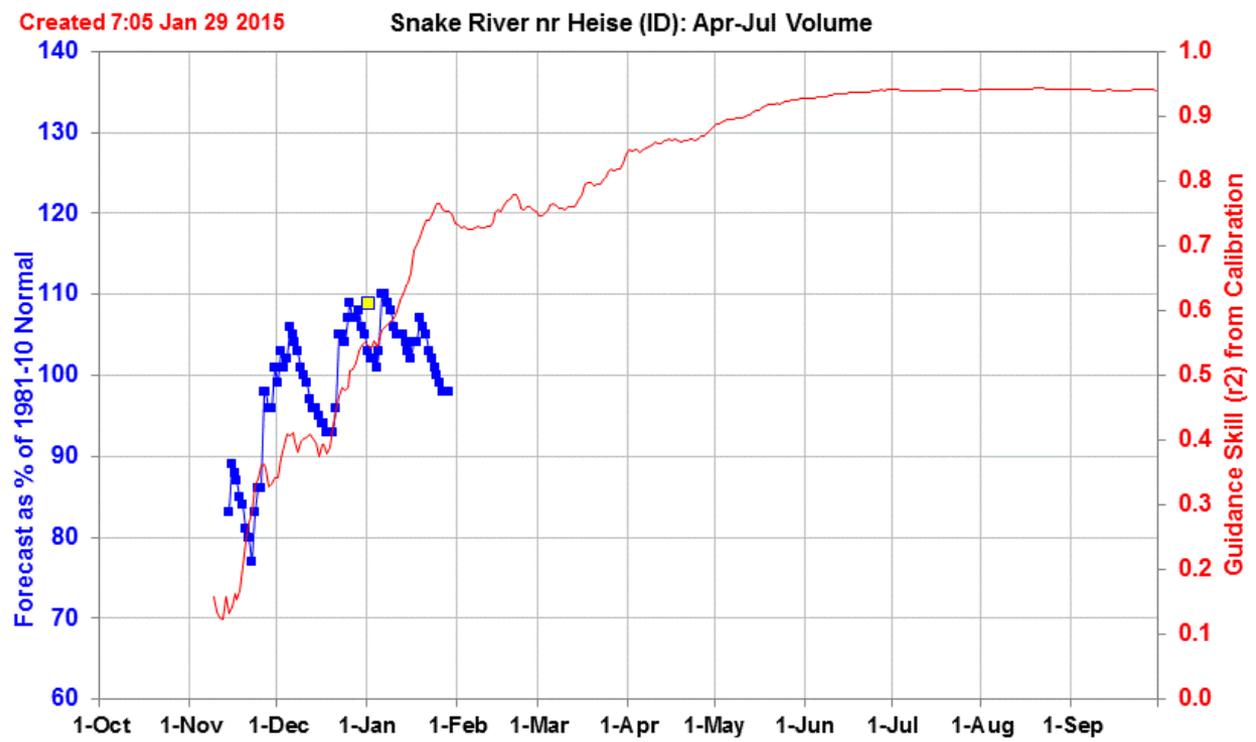
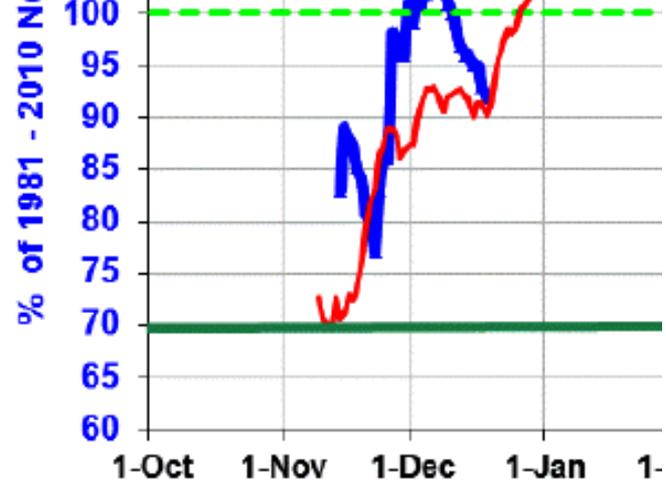
Updated  
December 24, 2014



Updated  
December 24, 2014

# 2015 Snake River near Heise: Apr - Jul Volume

## NRCS Monthly Forecasts are Yellow Squares



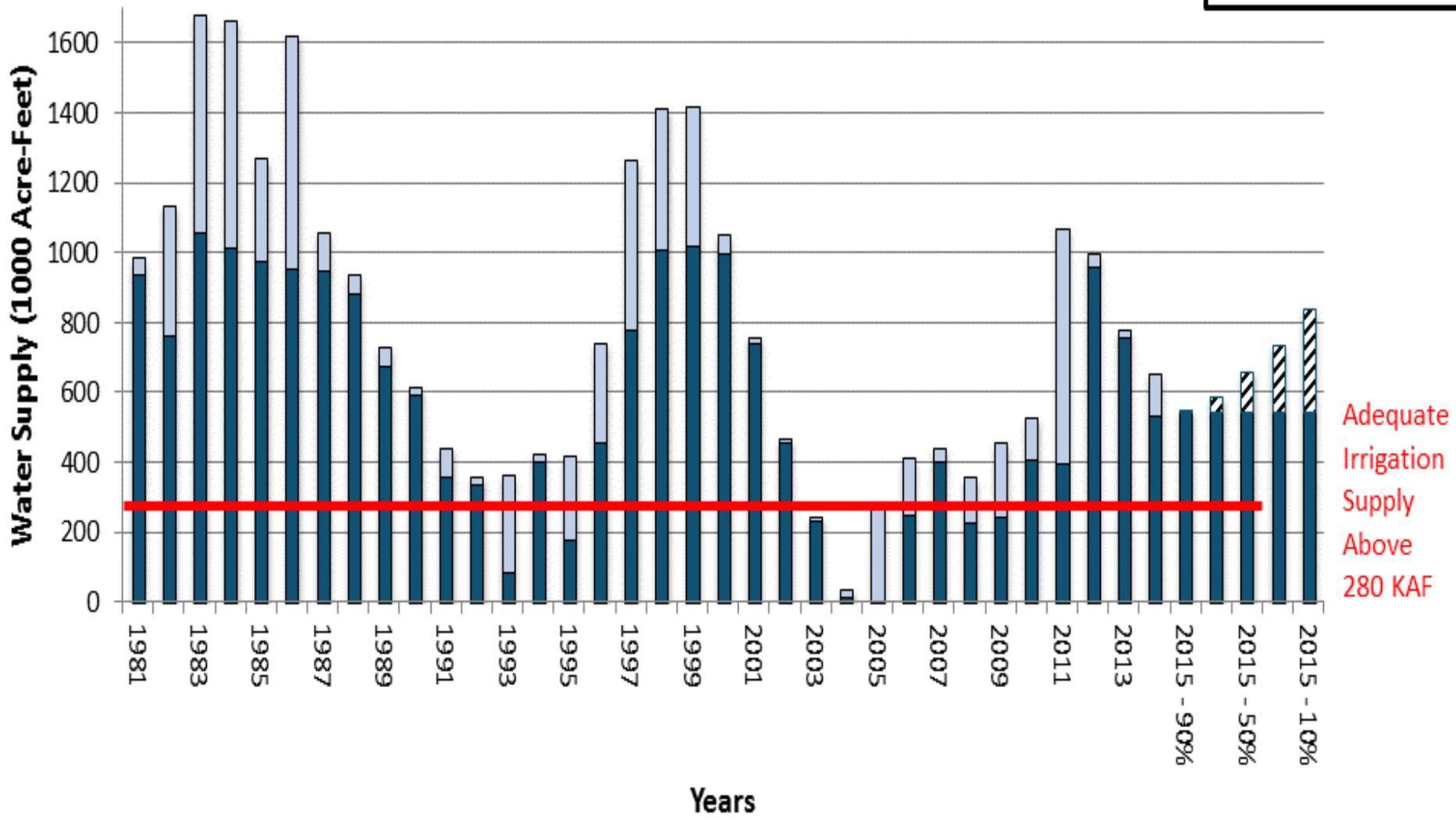
- Guidance fcst % norm
- Official fcst % norm
- Guidance Skill (r2)

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**Note: Bear Lake Capacity does not include 119 KAF of inactive storage that can be released (2003 & 1930s). Values below the active storage level are rounded up zero.**

**Jan 1 Historic and Forecasted Surface Water Supply  
Bear River Basin**

StreamFlow Apr-Sep  
 Reservoir 31-Dec



Adequate  
Irrigation  
Supply  
Above  
280 KAF

# **Bear River Basin / Montpelier Reservoir**

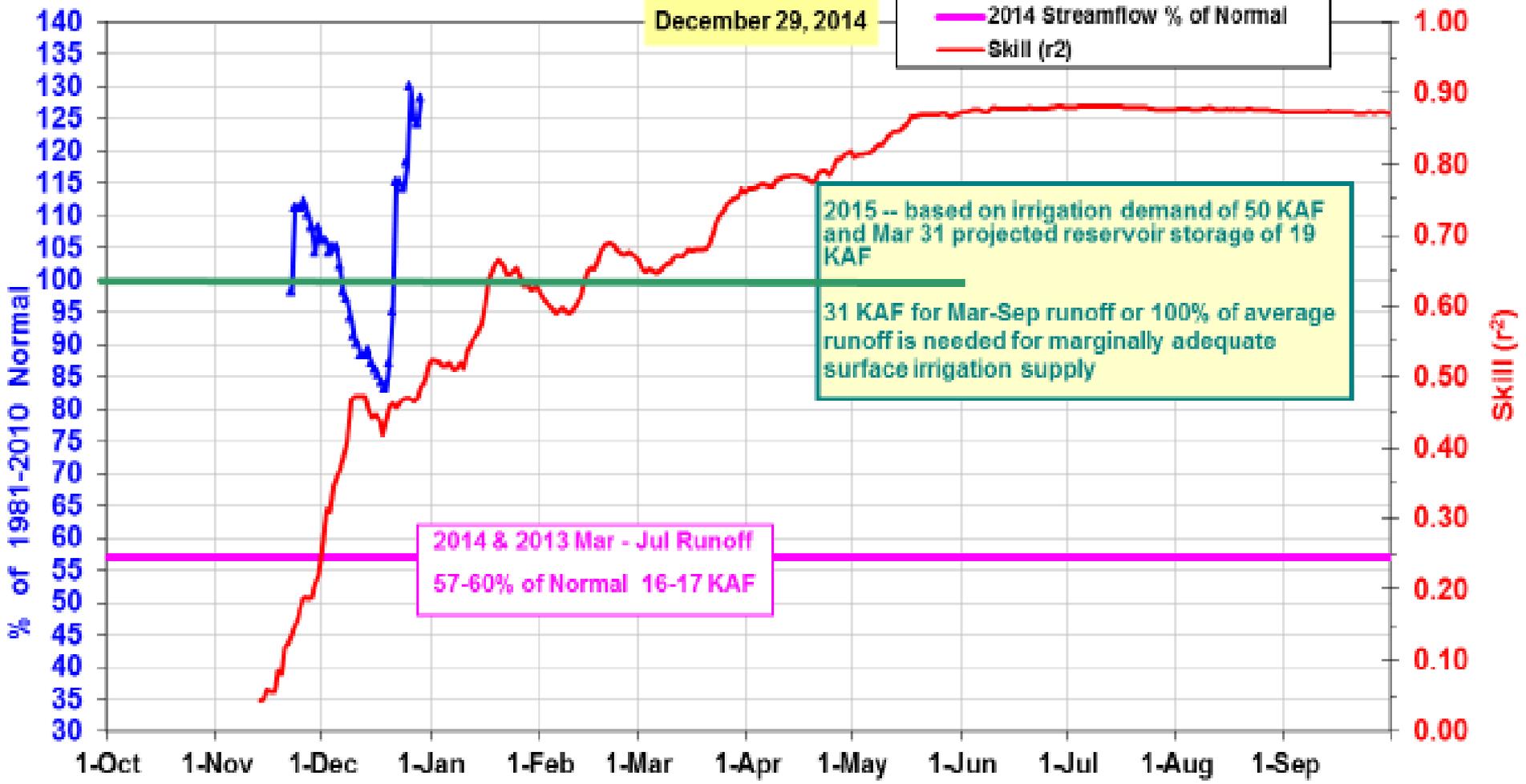
- **Need to verify Ag Shortage Threshold with change in storage contents**
- **Interest in Bear Lake SWSIs for Ag use and Smiths Fork SWSI**
- **Montpelier Reservoir Operating Guide needs updating**

2015 Oakley Reservoir Inflow: Mar - Jul Volume,  
 NRCS Monthly / mid-Month Forecasts are Squares



Updated  
 December 29, 2014

- Daily Guidance Forecast
- Monthly Forecasts
- 2014 Streamflow % of Normal
- Skill (r<sup>2</sup>)



2015 -- based on irrigation demand of 50 KAF and Mar 31 projected reservoir storage of 19 KAF  
 31 KAF for Mar-Sep runoff or 100% of average runoff is needed for marginally adequate surface irrigation supply

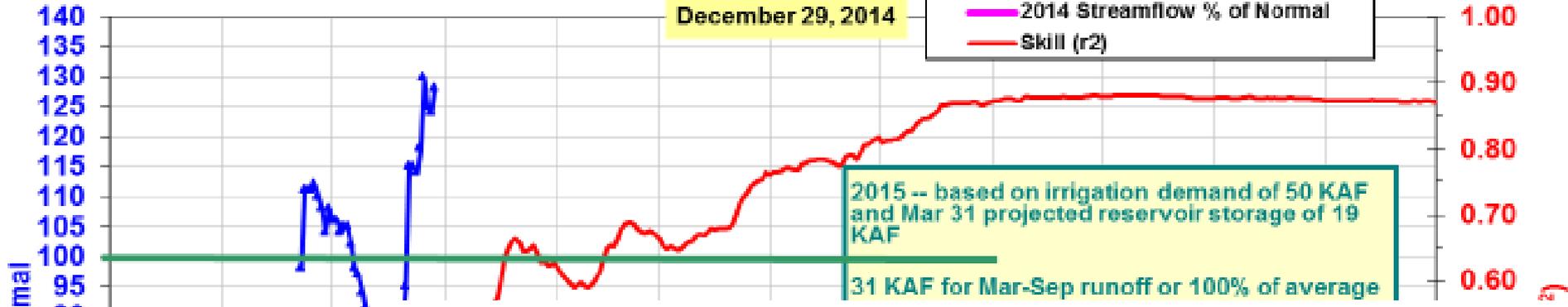
2014 & 2013 Mar - Jul Runoff  
 57-60% of Normal 16-17 KAF

**2015 Oakley Reservoir Inflow: Mar - Jul Volume,  
NRCS Monthly / mid-Month Forecasts are Squares**

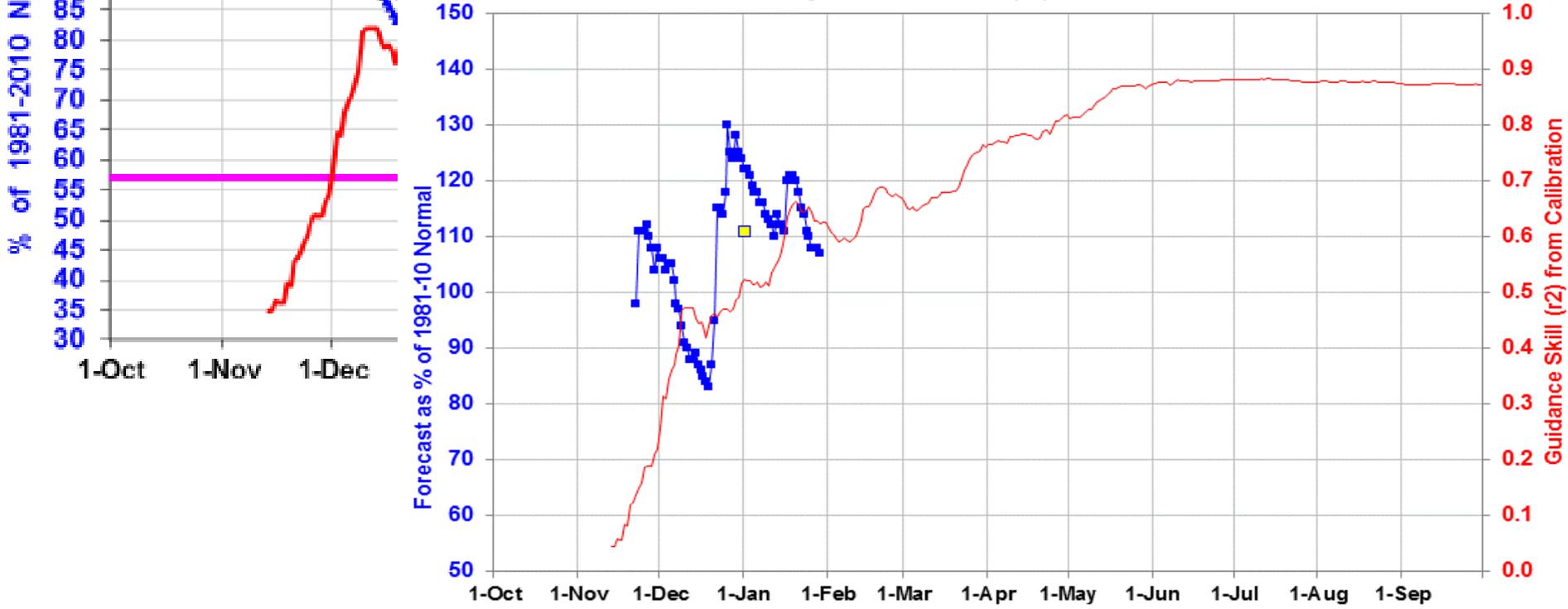
Updated

December 29, 2014

- Daily Guidance Forecast
- Monthly Forecasts
- 2014 Streamflow % of Normal
- Skill (r<sup>2</sup>)



Oakley Reservoir Inflow (ID): Mar-Jul Volume

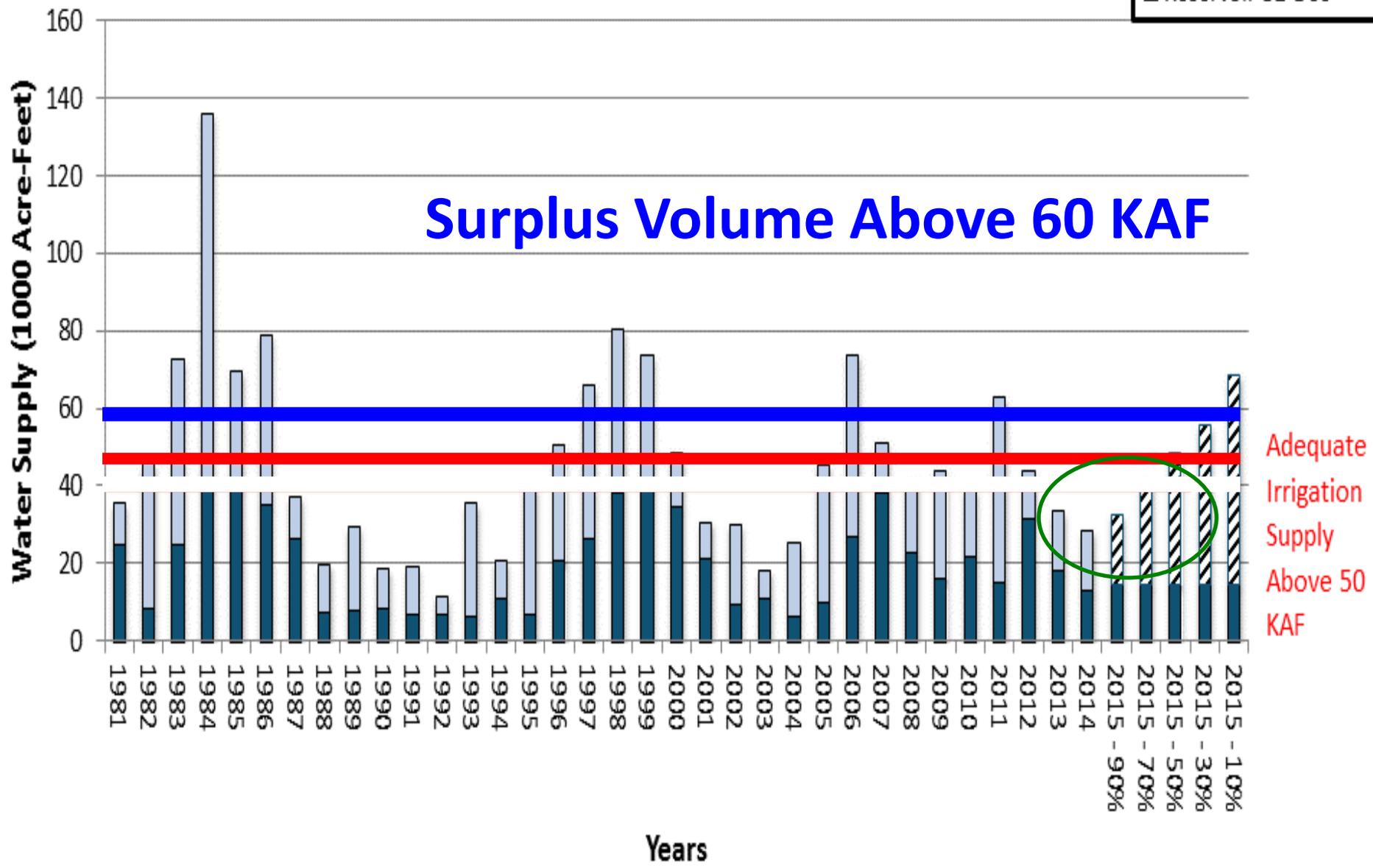


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- Guidance Skill (r<sup>2</sup>)

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# Jan 1 Historic and Forecasted Surface Water Supply Oakley Basin

StreamFlow Mar-Sep  
 Reservoir 31-Dec

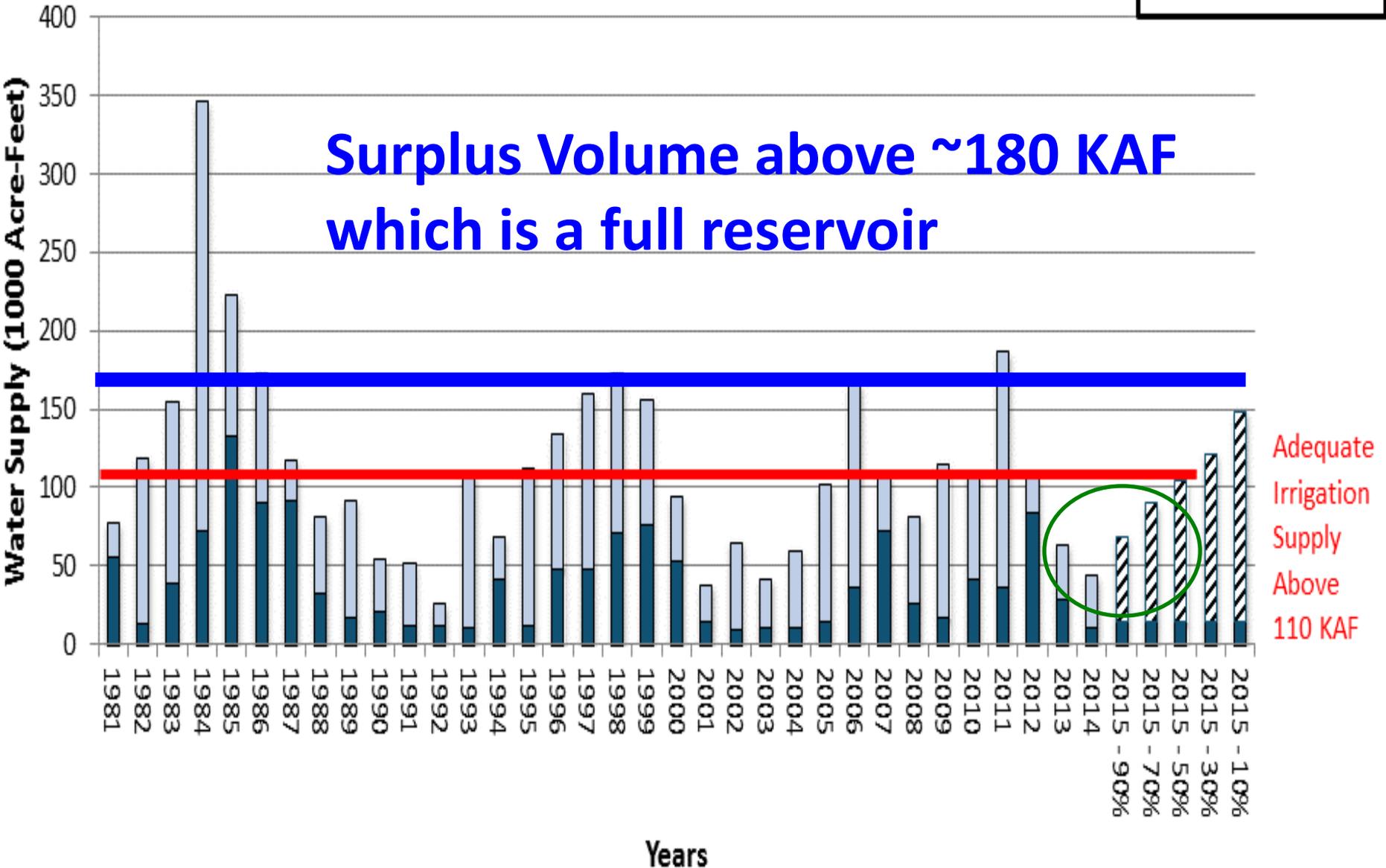


# Oakley Basin

- **Interest in reservoir telemetry gage**
- **Interest in automating snow courses**
  - **Vipont in UT/NV**
  - **Badger Gulch**
  - **New site in Big Piney area – SE of Jackpot**
- **Reservoir Operating Guide – need help to complete**

# Jan 1 Historic and Forecasted Surface Water Supply Salmon Falls Creek Basin

StreamFlow Mar-Sep  
 Reservoir 31-Dec



# Salmon Falls Basin

- **Snow Course to automate**
  - **O'Neil Snow Course in NV**
- **Reservoir Operating Guide is current**
- **BSU project to update Snow to Flow Relationships to monitor peak flows**

An aerial photograph of a mountain slope covered in snow. The terrain is dotted with numerous evergreen trees, and long, dark shadows are cast across the snow, indicating a low sun position. The overall scene is a winter landscape.

**Rain on Snow up to  
7,000 - 8,000 ft  
Clearwater Basin  
abv Dworshak Resv  
Jan 26, 2015**