



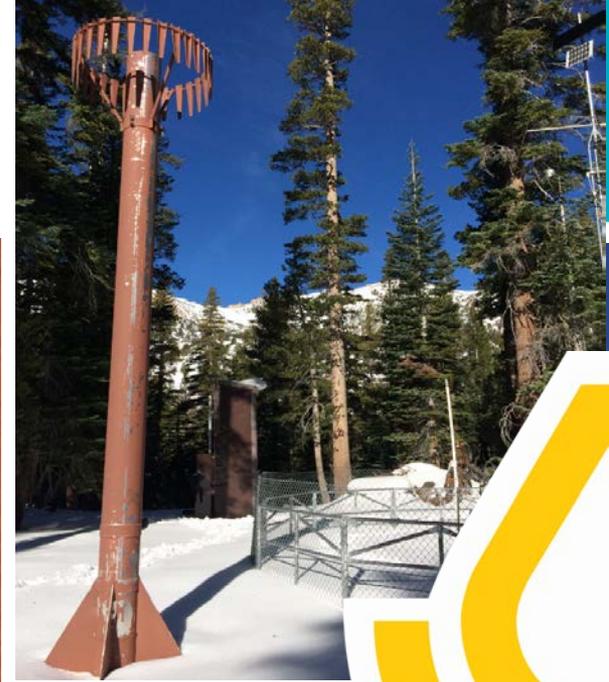
United States Department of Agriculture

2018 Snowpack Status and Streamflow Outlook for the Truckee, Carson, Walker and Humboldt Basins

January 12, 2018
Nevada Division of
Water Resources



My 2017 Souvenir



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Natural
Resources
Conservation
Service

www.nv.nrcs.usda.gov/snow

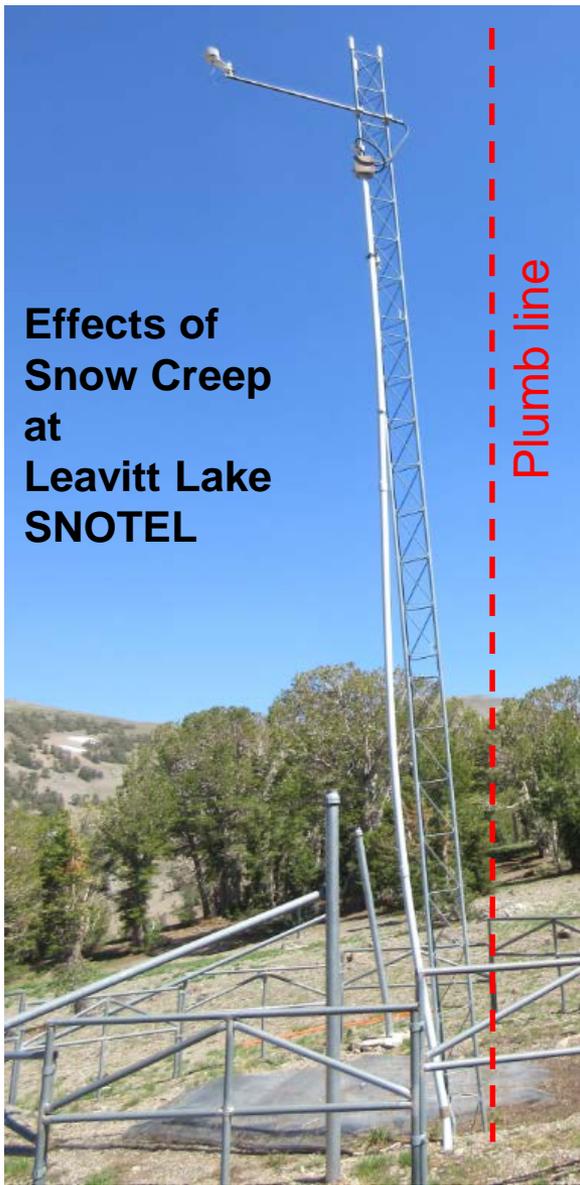


Leavitt Lake
 6/6/2017
 Depth 180in (15ft)
 SWE 102.5in (8.5ft)
 57% overall density

Density near the ground
 was much greater,
 where the snow/ice was
 translucent

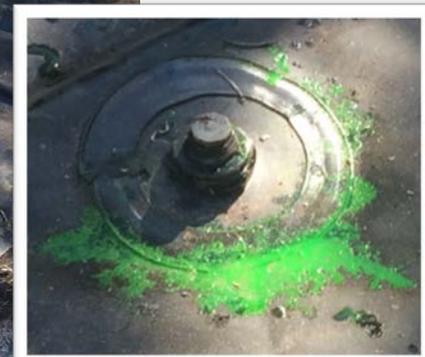


How much trouble does a record snowpack cause?



Effects of Snow Creep at Leavitt Lake SNOTEL

Plumb line



Snow pillow seems failed at Burnside Lake SNOTEL & Forestdale Creek SNOTEL



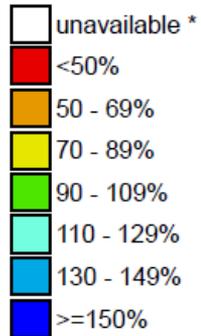
Perimeter fences bent and/or compressed into ground at a number of sites



Nevada/California SNOTEL Current Snow Water Equivalent (SWE) % of Normal

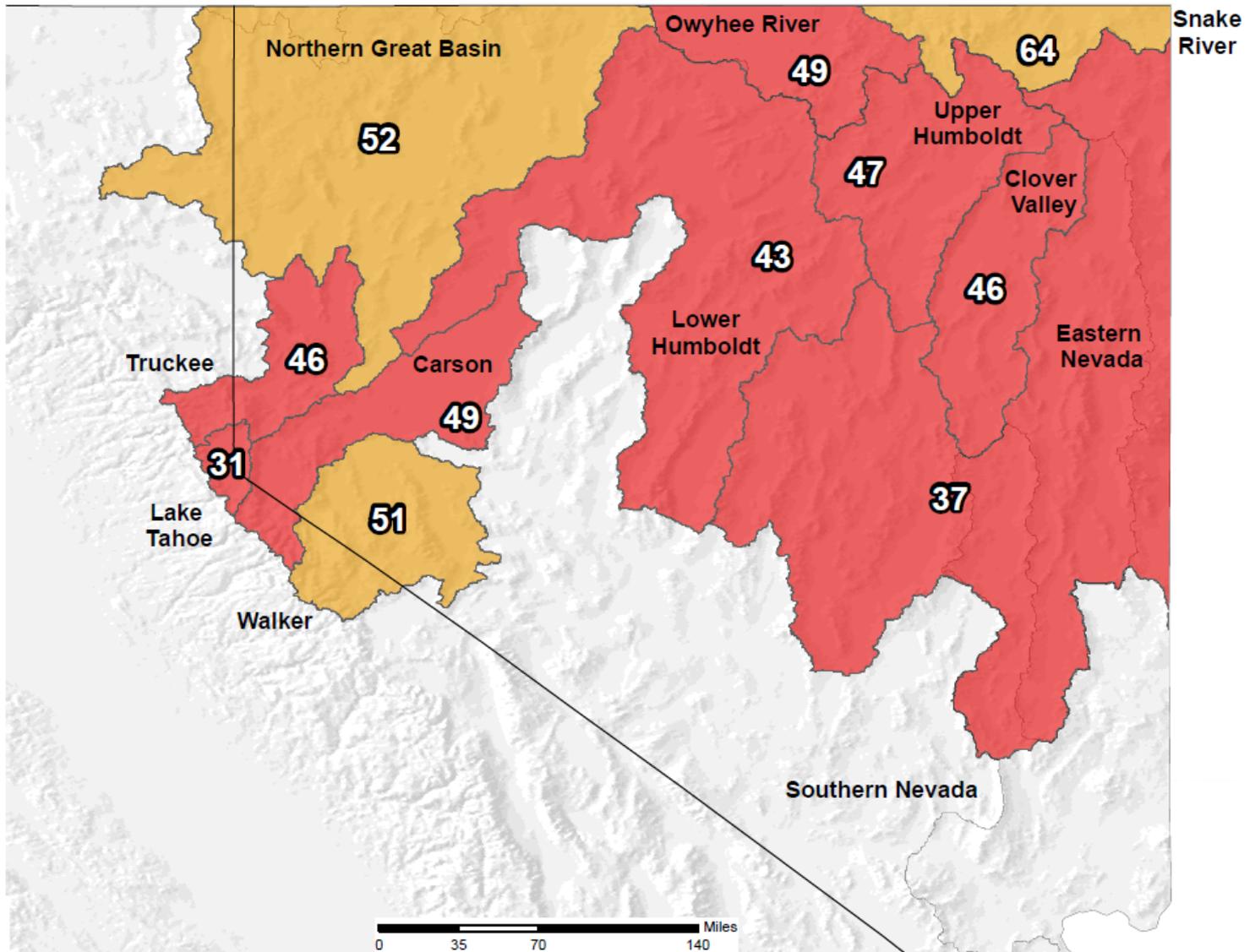
Jan 11, 2018

Current Snow Water Equivalent 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





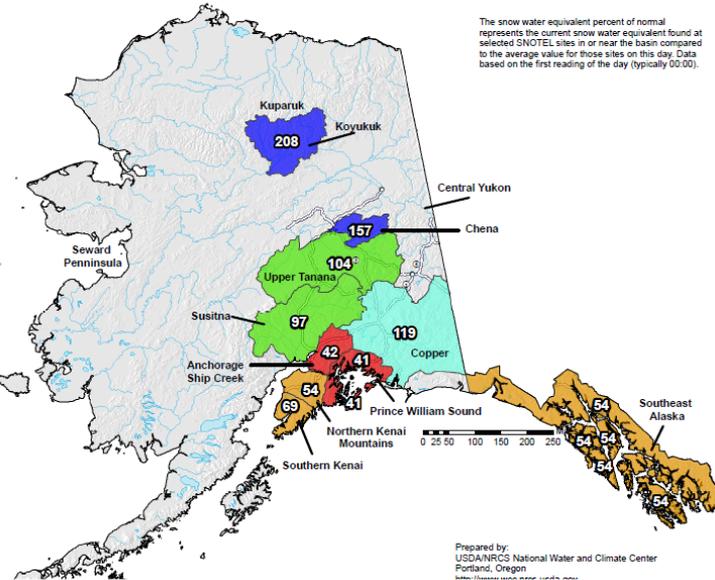
United States Department of Agriculture

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

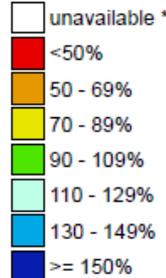
Jan 11, 2018

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

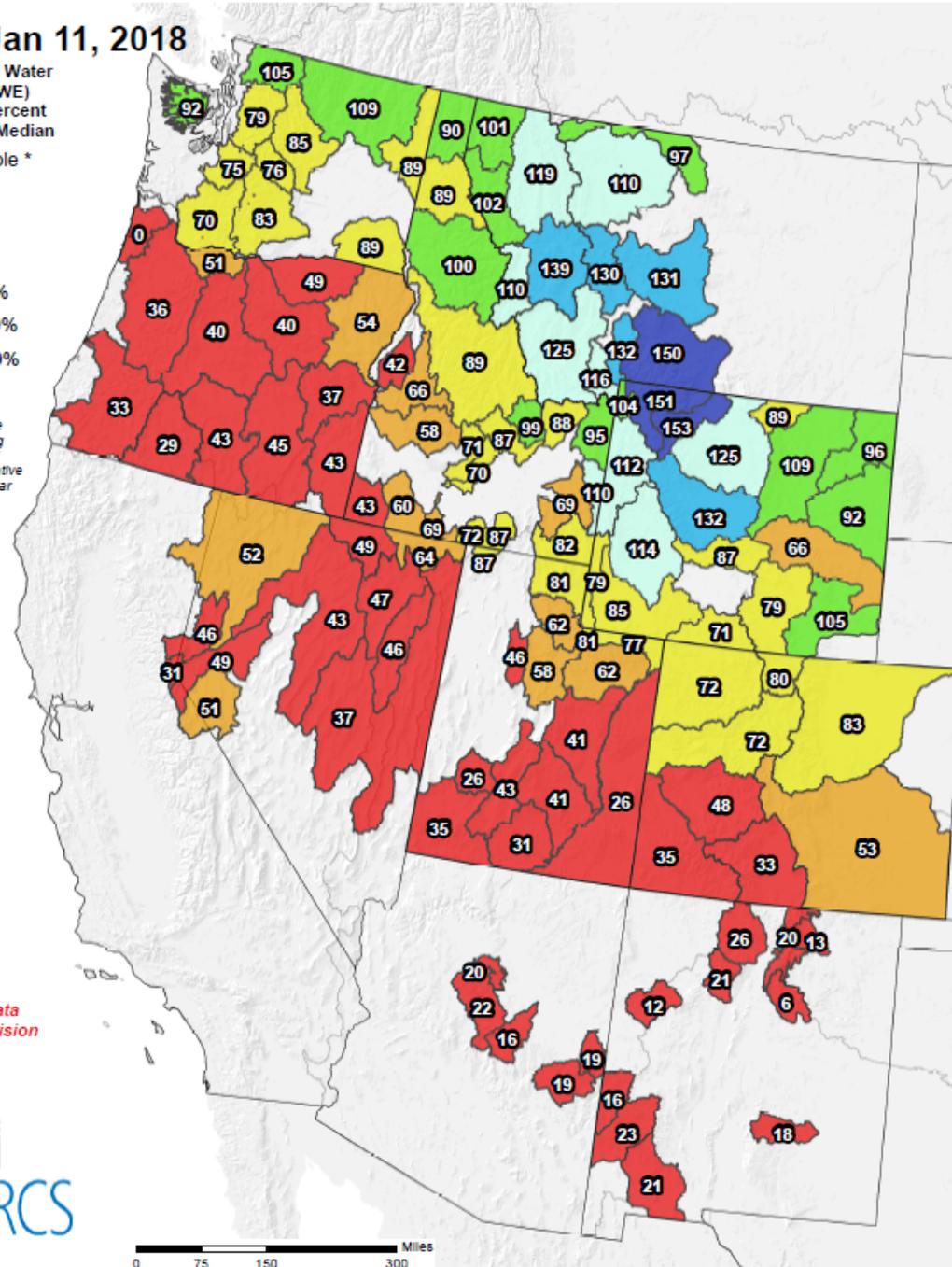
The snow water equivalent percent of normal represents the current snow water equivalent found at selected SNOTEL sites in or near the basin compared to the average value for those sites on this day. Data based on the first reading of the day (typically 00:00).



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

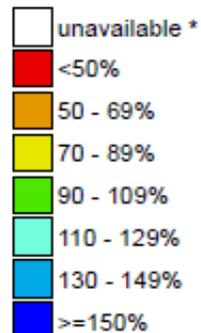


Sometimes it helps to know you have company...

Nevada/California SNOTEL Water Year (Oct 1) to Date Precipitation % of Normal

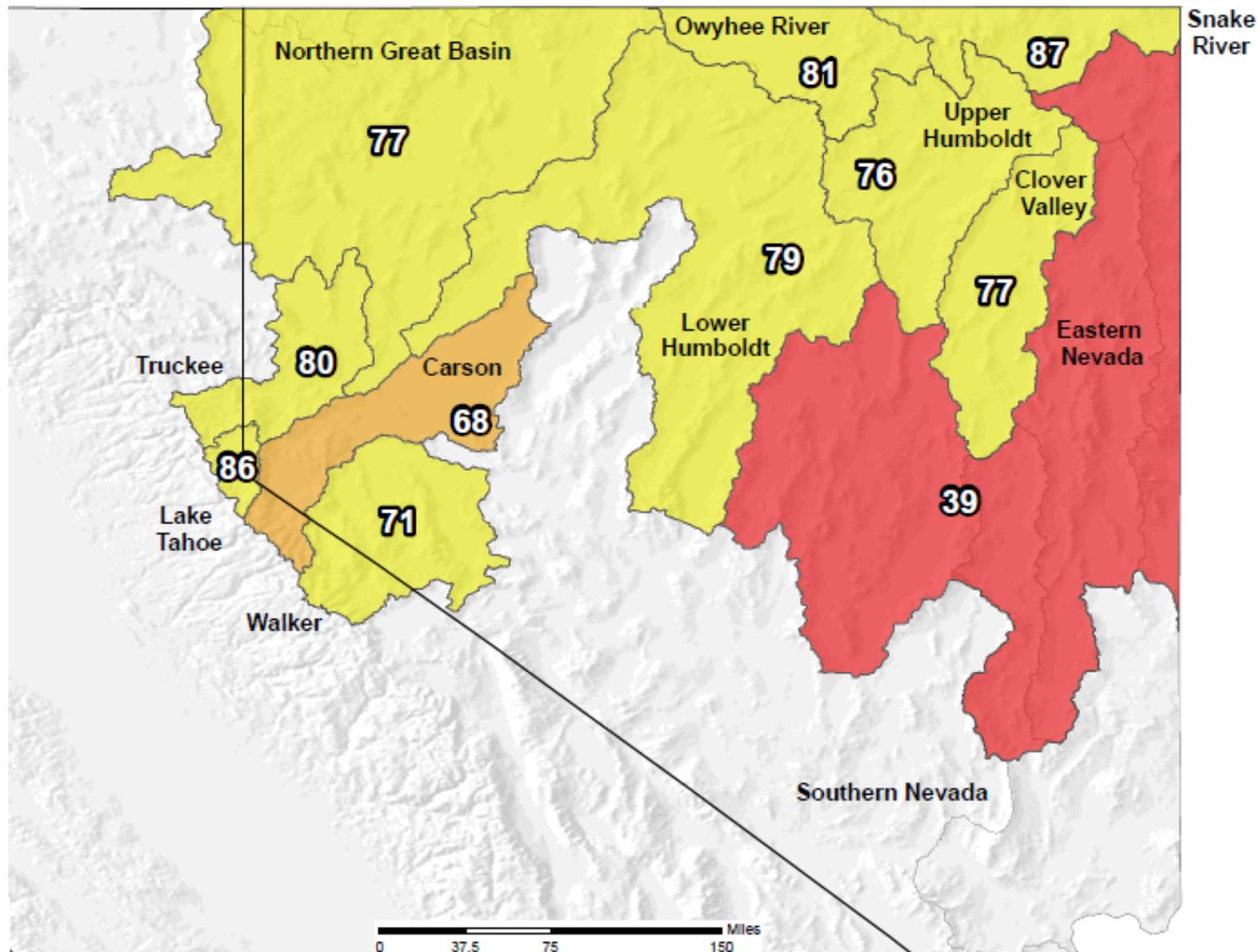
Jan 11, 2018

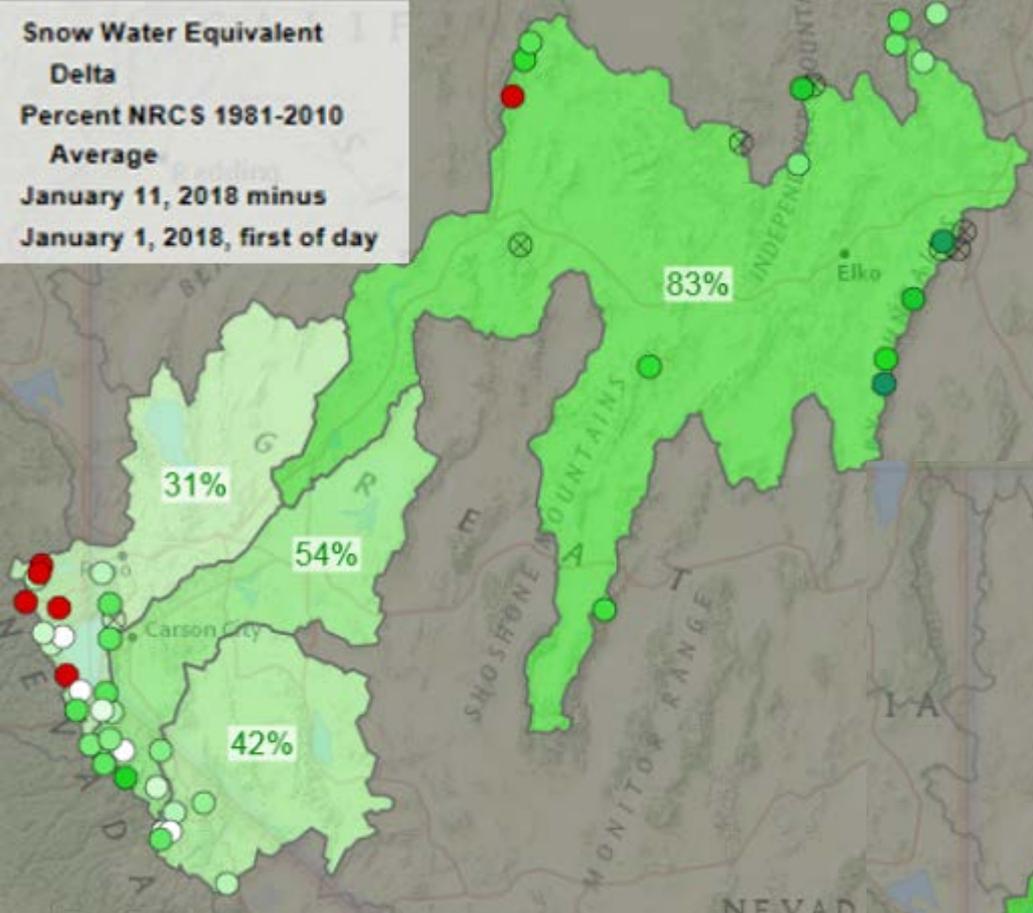
Water Year (Oct 1) to Date Precipitation Basin-wide Percent of 1981-2010 Average



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

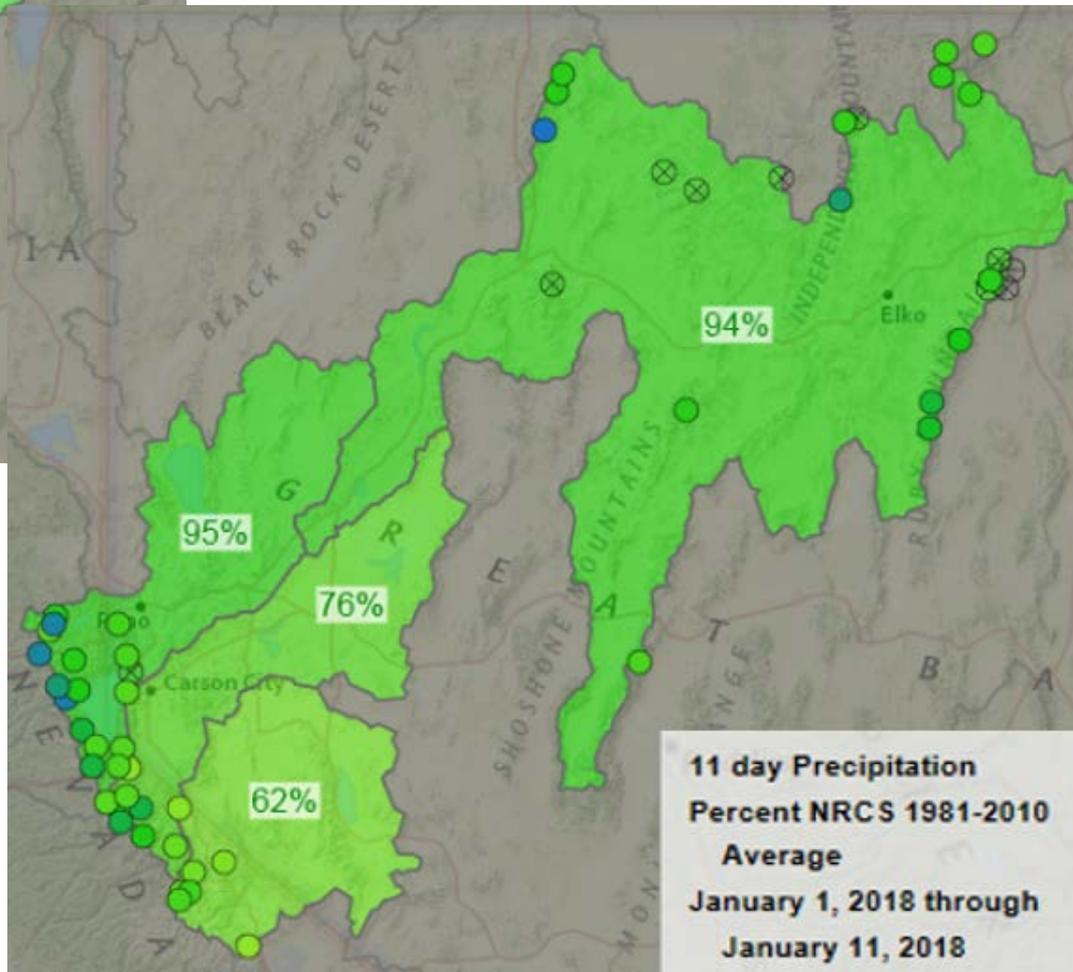
Provisional data subject to revision





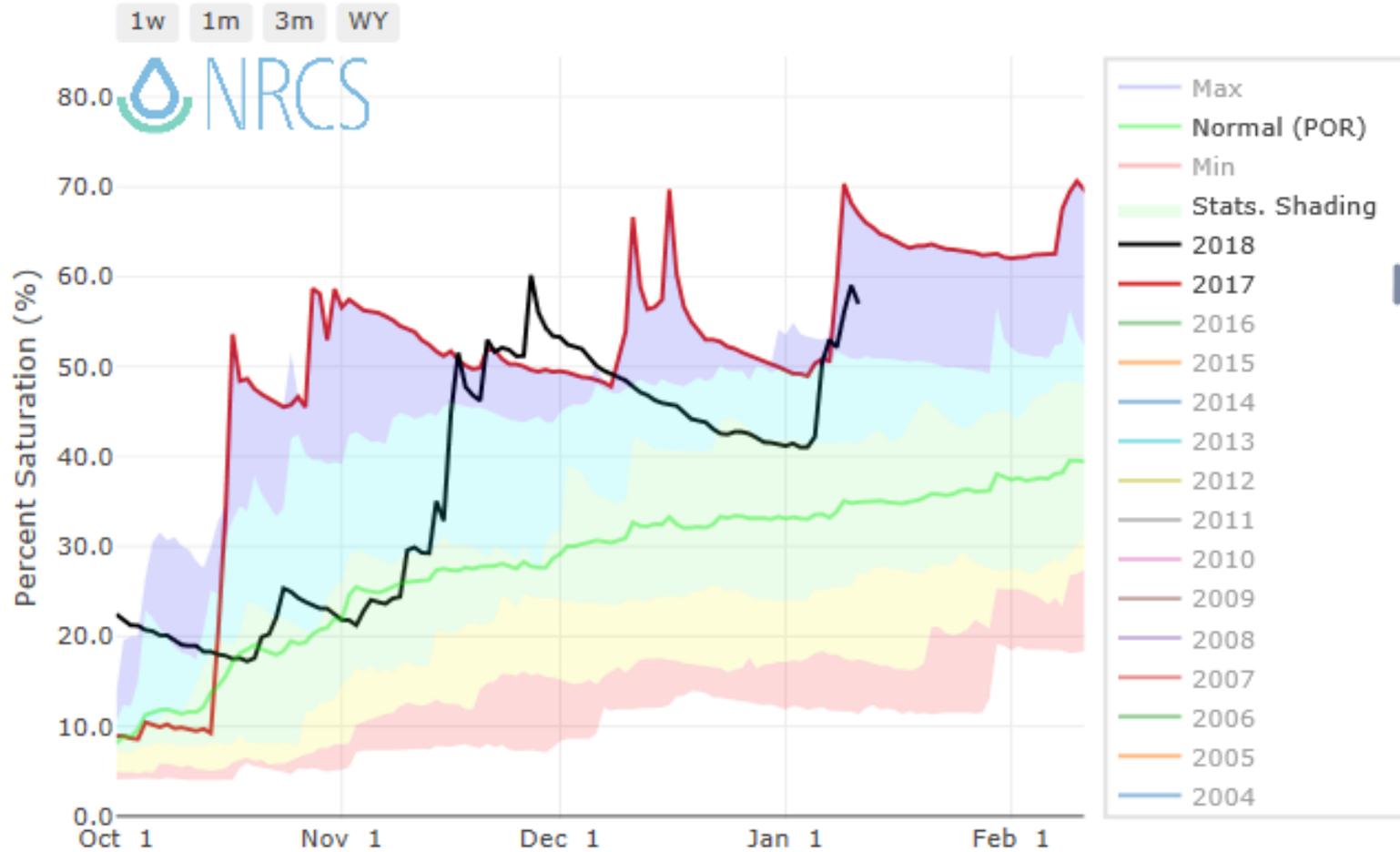
January Precip mostly OK

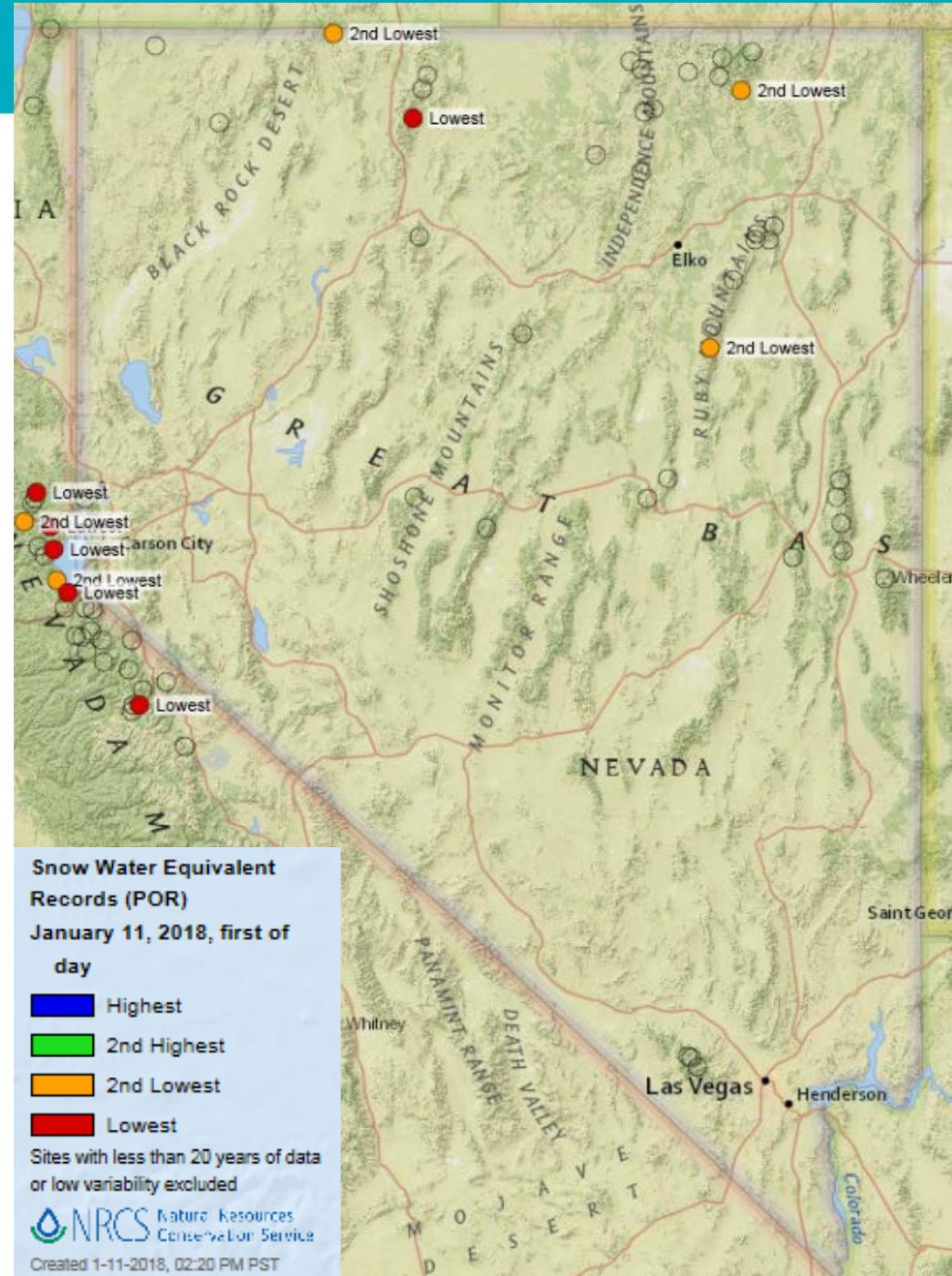
Snow Drought Signature
SWE Delta < Precip



Soil Moisture Response to January Rain

Average Soil Saturation in Truckee River Basin



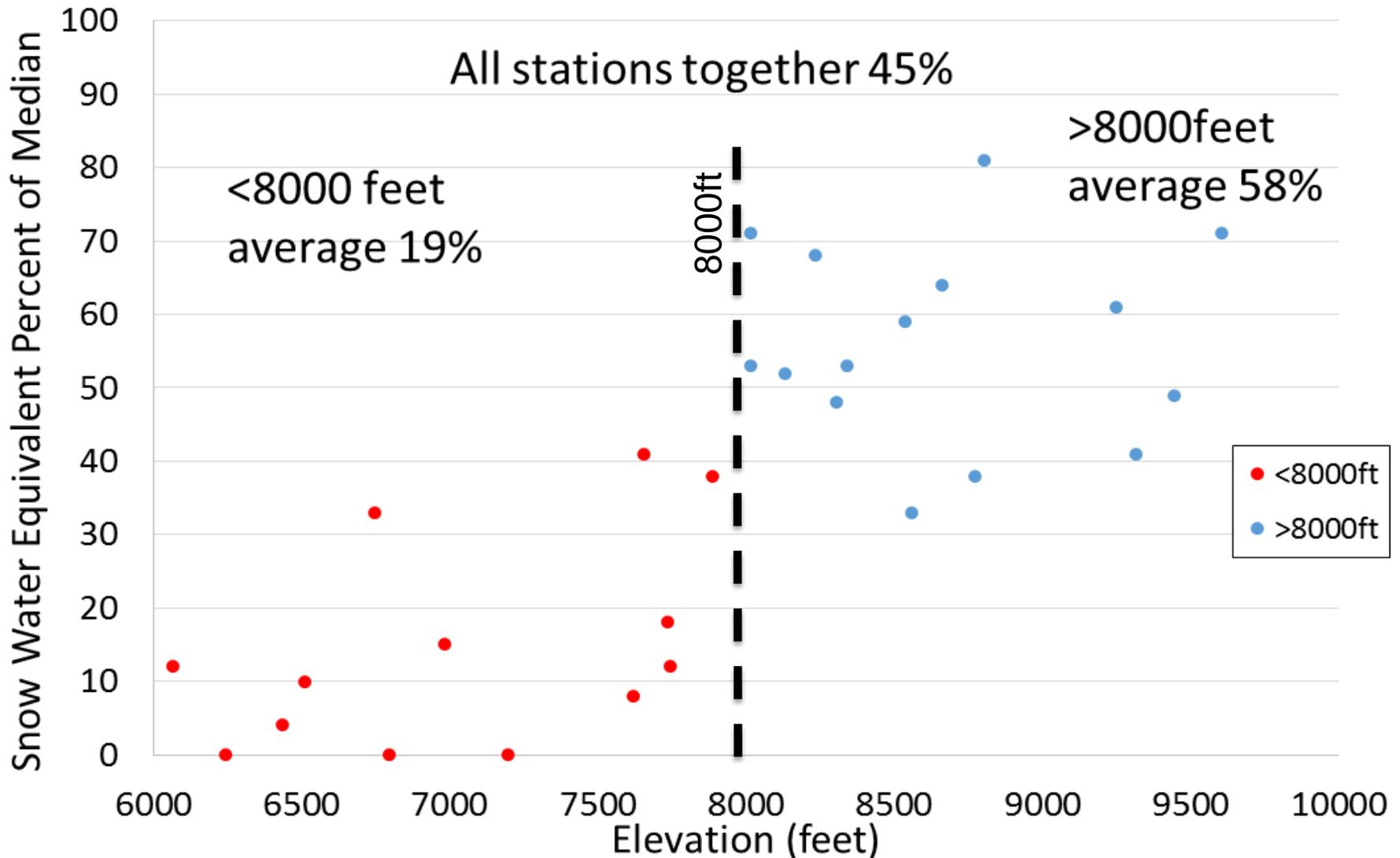


Record or Near Record Low SWE

All sites are below 8,000ft

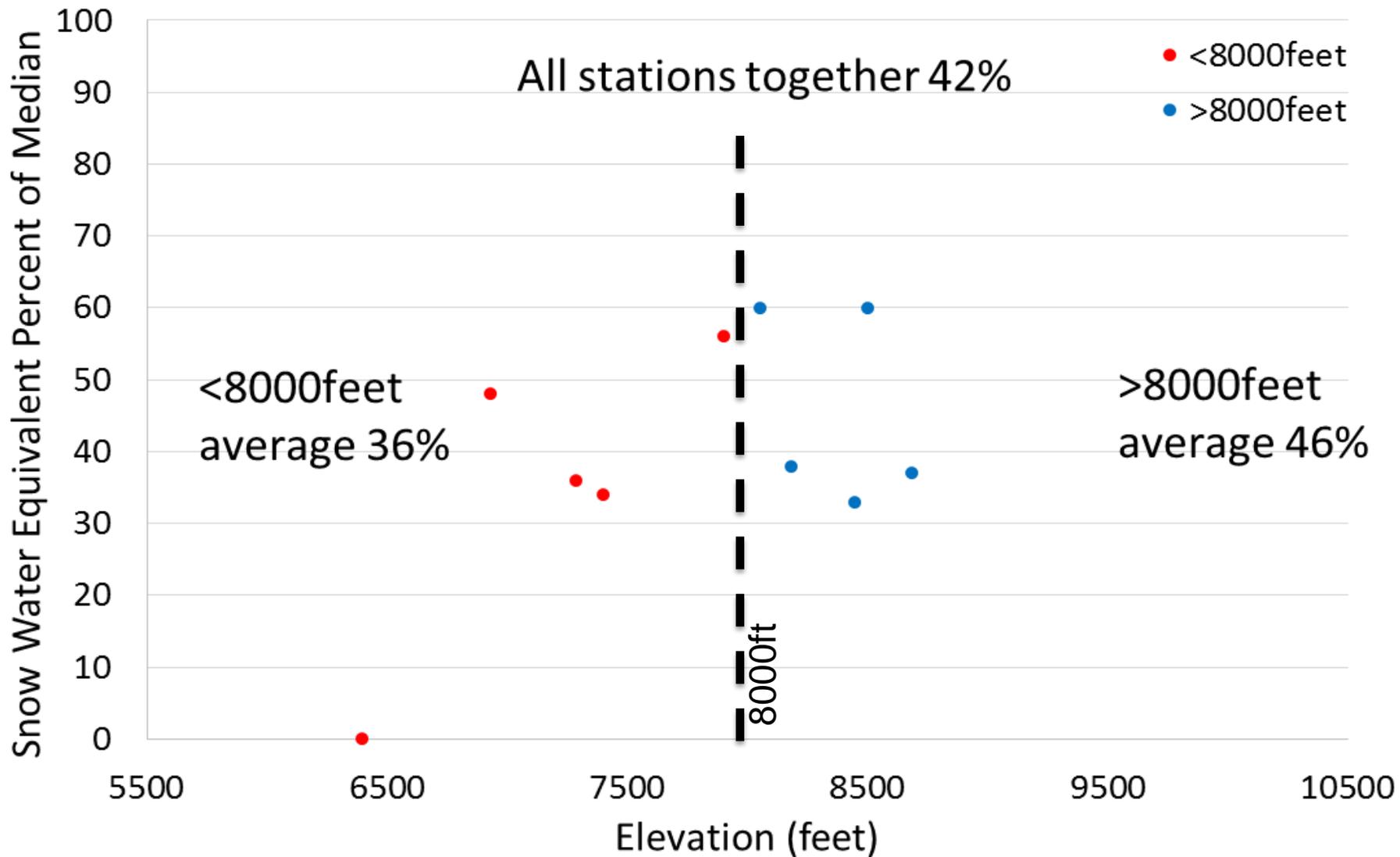
Based on SNOTEL data (last ~37 years)

Tahoe, Truckee, Carson and Walker Basins Jan 11, 2018 Snowpack Percent of Median vs Elevation

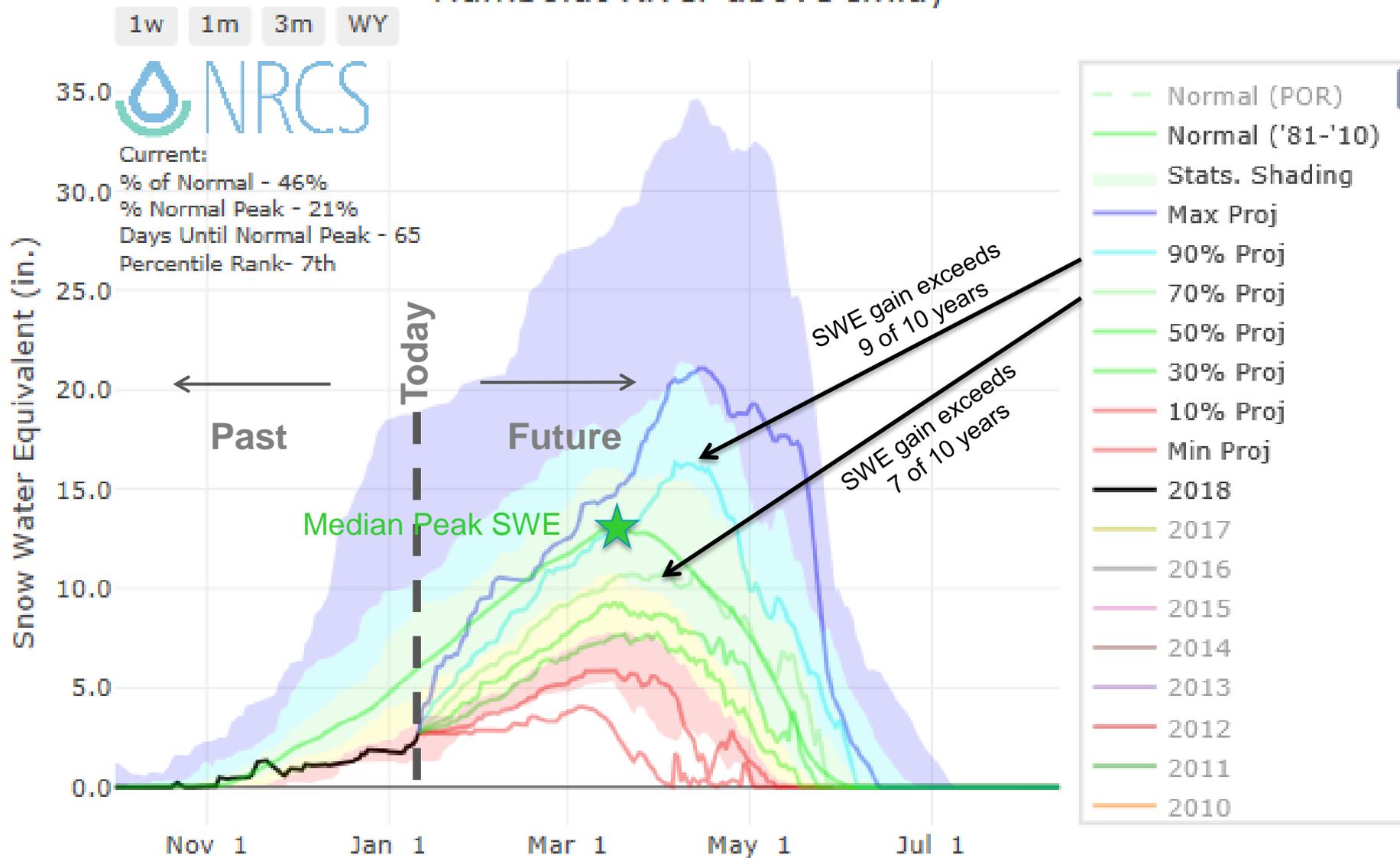


Humboldt Basin

January 11, 2018 Snowpack Percent of Median vs Elevation



Snow Water Equivalent Projections in Humboldt River above Imlay

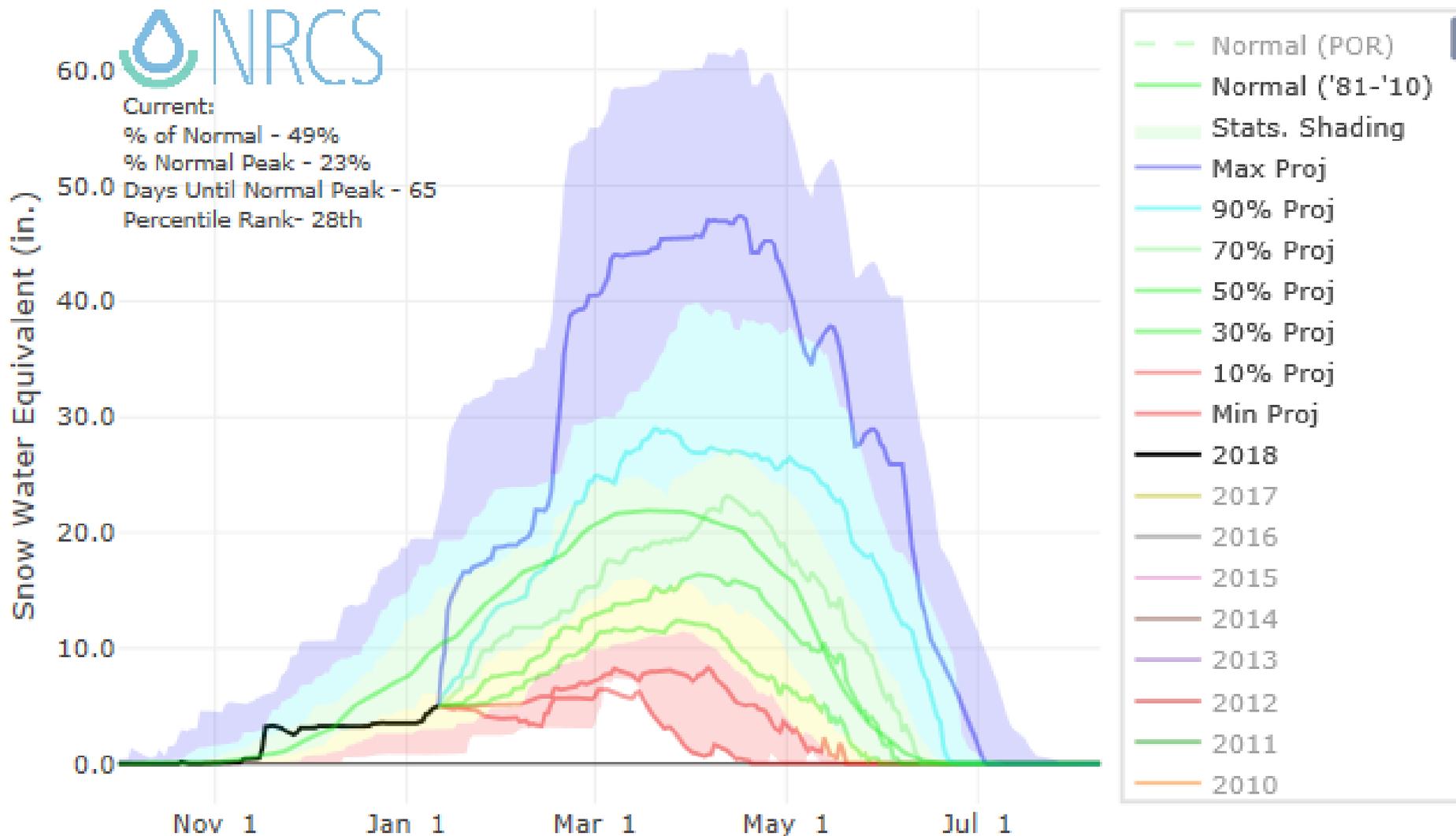


Snow Water Equivalent Projections in Carson River Basin

1w 1m 3m WY

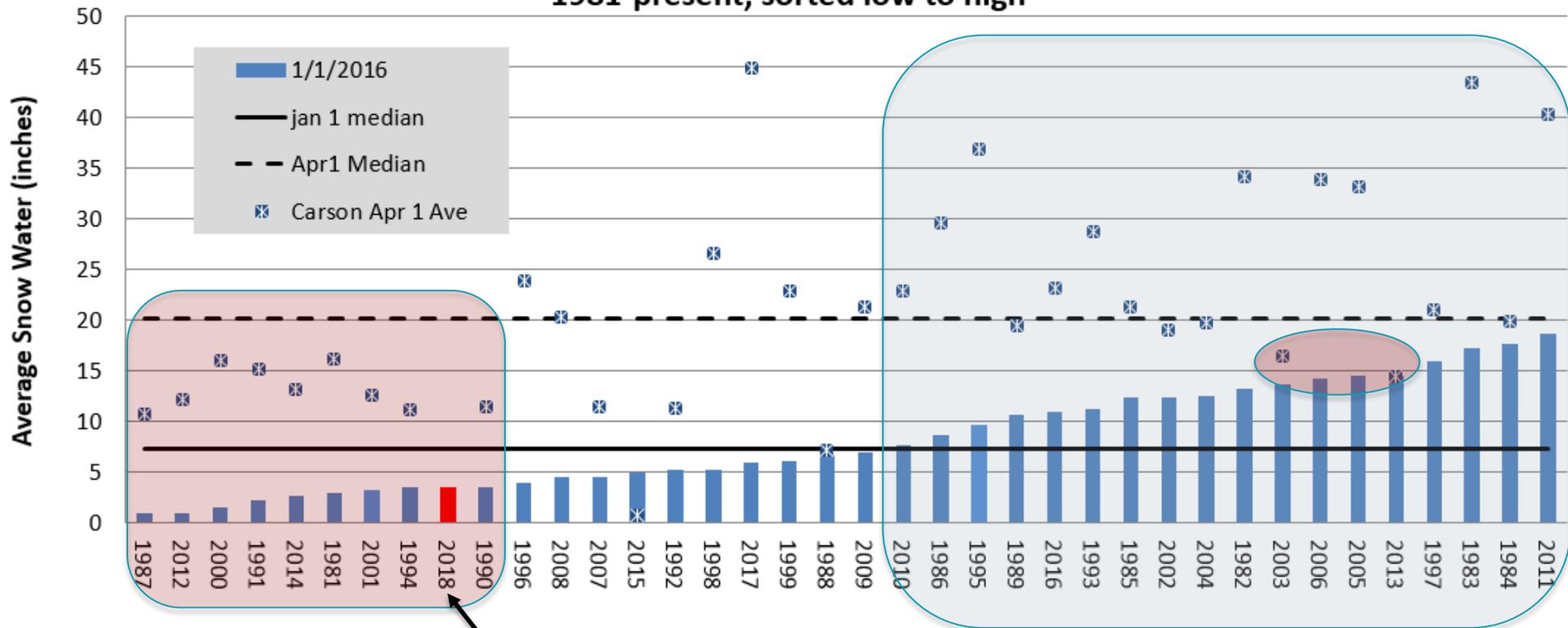


Current:
 % of Normal - 49%
 % Normal Peak - 23%
 Days Until Normal Peak - 65
 Percentile Rank - 28th



Most often we're either in the storm track or we're not...

**Average Snow Water in Carson River Basin Jan 1 vs Apr 1
1981-present, sorted low to high**



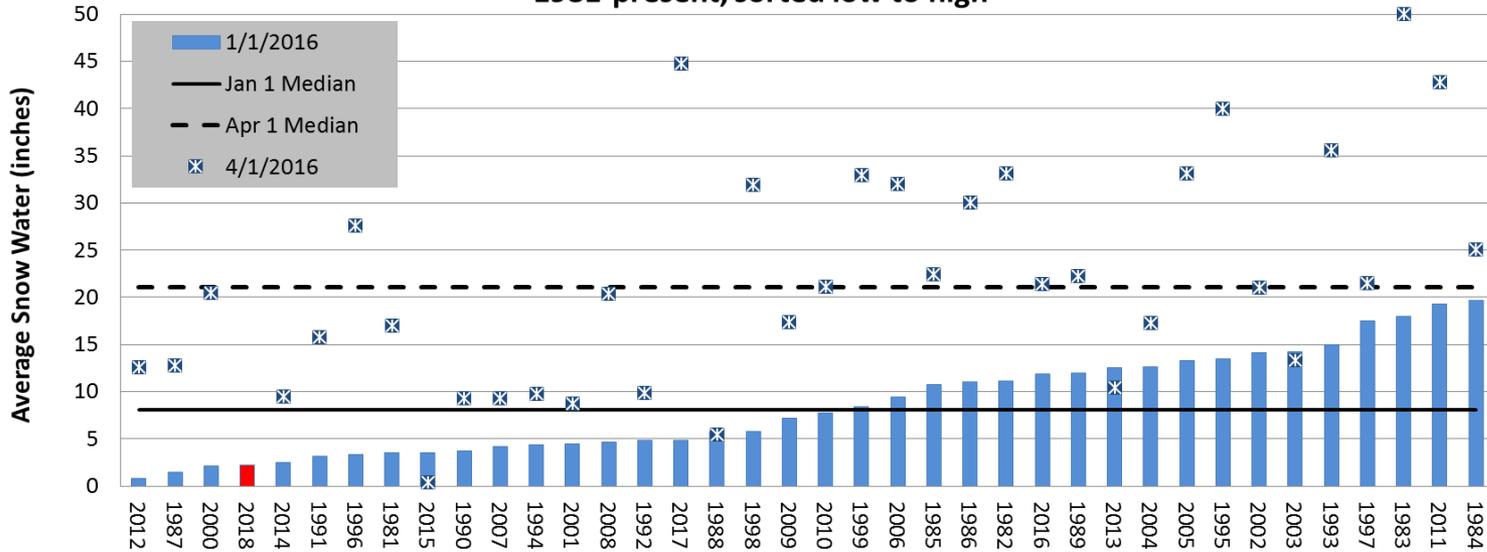
No winter that started <50% of median on Jan 1 has recovered to Apr 1 median peak

2018 is 9th lowest Jan 1 SWE since 1981

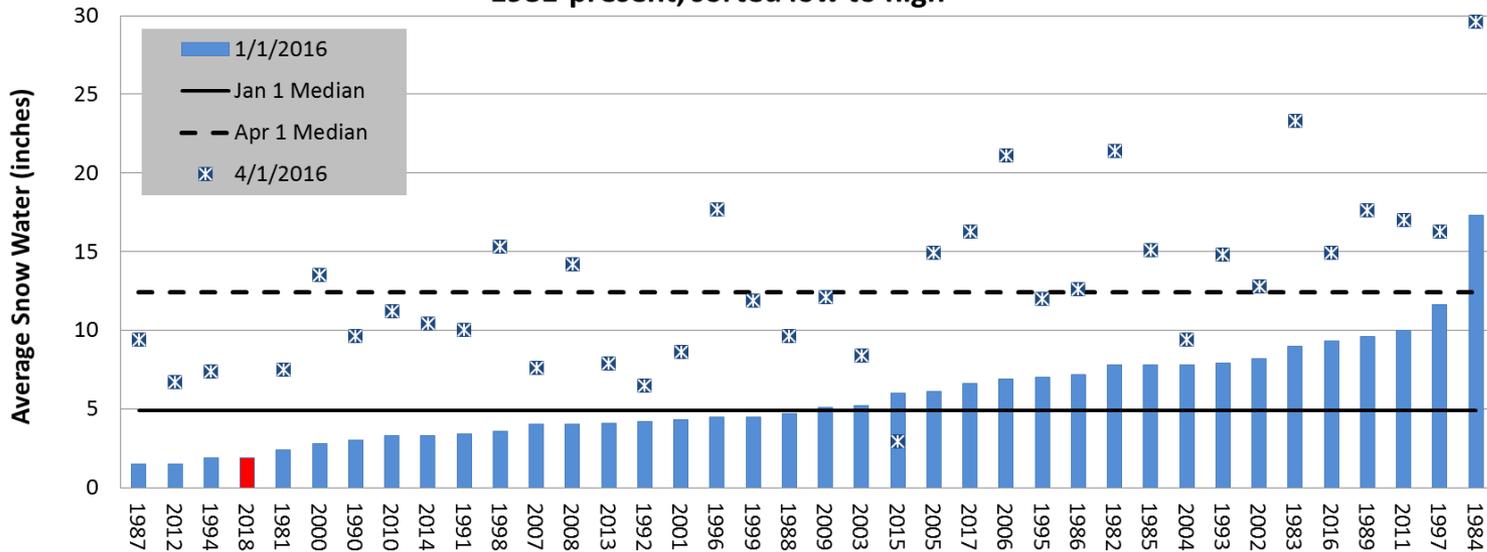
16 of 18 winters that started >100% of Jan 1 median were still near median or better on April 1.



**Average Snow Water in Lake Tahoe Basin Jan 1 vs Apr 1
1981-present, sorted low to high**



**Average Snow Water in Upper Humboldt River Basin Jan 1 vs Apr 1
1981-present, sorted low to high**



4th worst
start
since
1981 in
Tahoe
and
Humboldt
Basins



January 1, 2018

Streamflow Forecasts - Nevada & Eastern Sierra

Forecasted April - July streamflow as a percentage of the 1981 - 2010 Average



Summer Streamflow Forecasts

Generally ~30-80% of average

Key Points (50% exceedance):

Lake Tahoe Net Inflow 56%

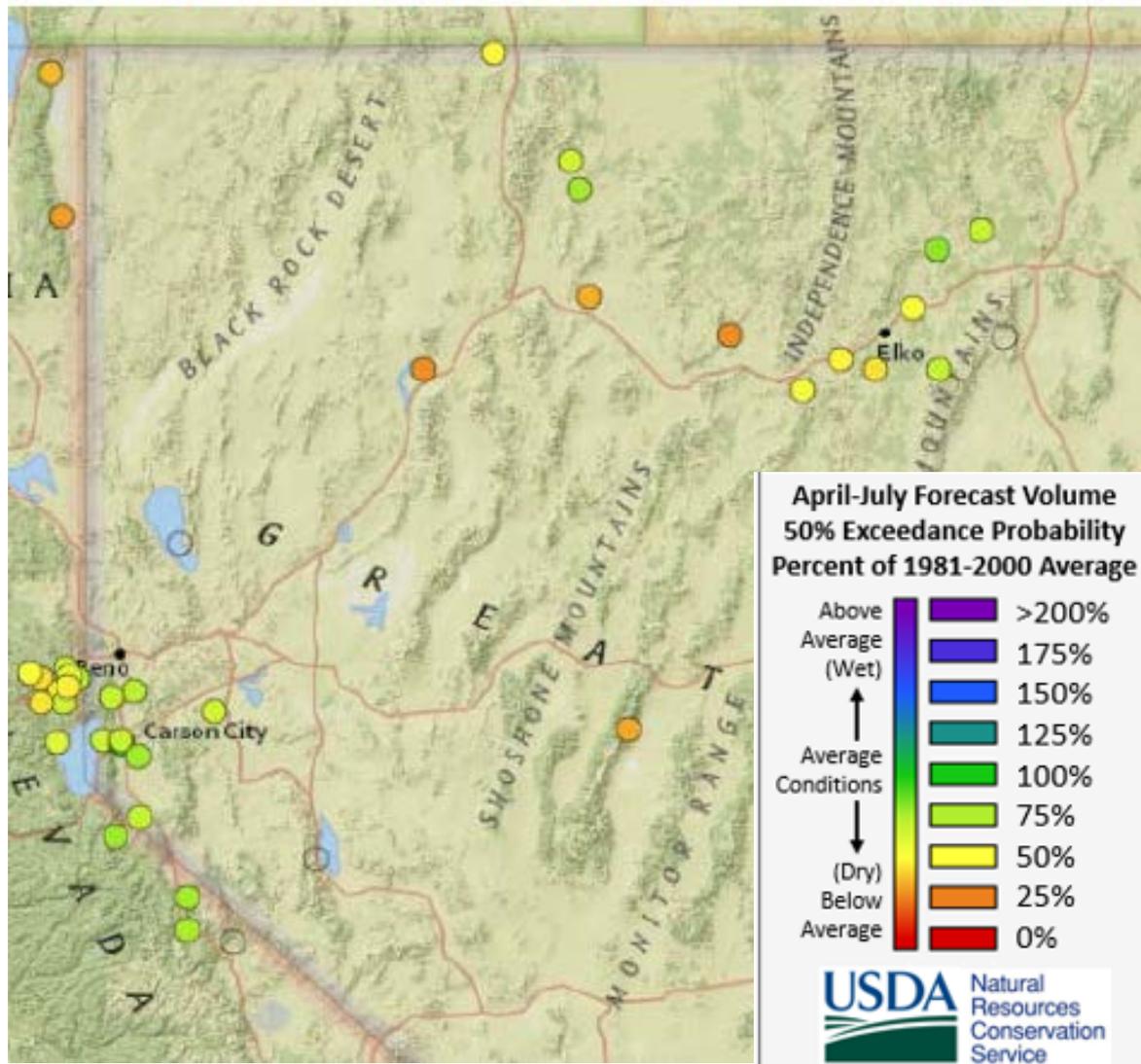
Truckee River at Farad 65%

Carson R near Fort Churchill 64%

E Walker R near Bridgeport 81%

W Walker R near Coleville 77%

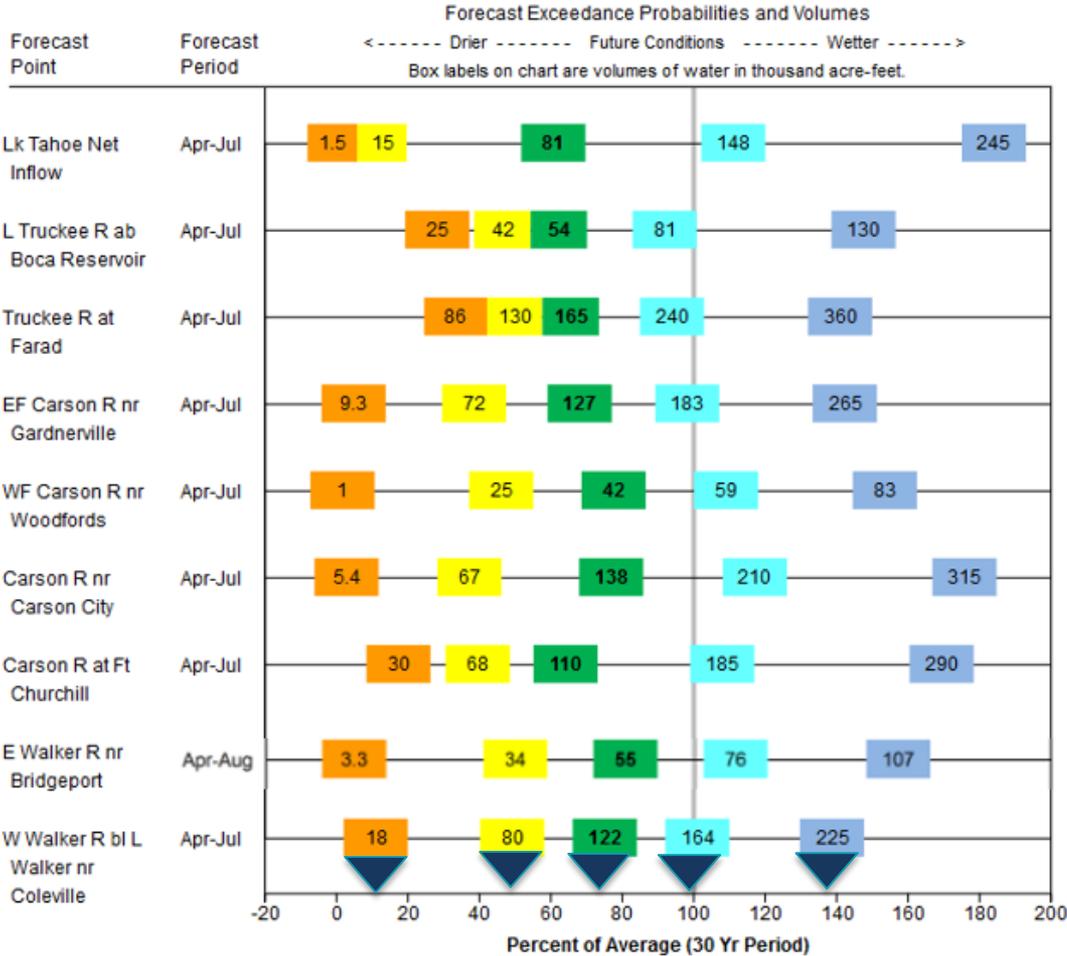
Humboldt near Imlay 28%



Eastern Sierra Basin Summary

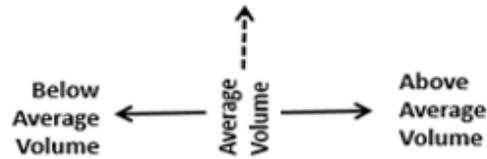
Water Supply Forecasts

January 1, 2018



Still a wide range of possible outcomes between 90% and 10% exceedances

Center of box = % of Average



Colored boxes are 5 exceedance forecasts - Numbers in box are KAF

90% Exceedance Forecast (KAF)	70% Exceedance Forecast (KAF) There is a 70% chance that flows will exceed this volume	50% Exceedance Forecast (KAF) There is a 50% chance that flows will exceed this volume	30% Exceedance Forecast (KAF) There is a 30% chance that flows will exceed this volume	10% Exceedance Forecast (KAF)
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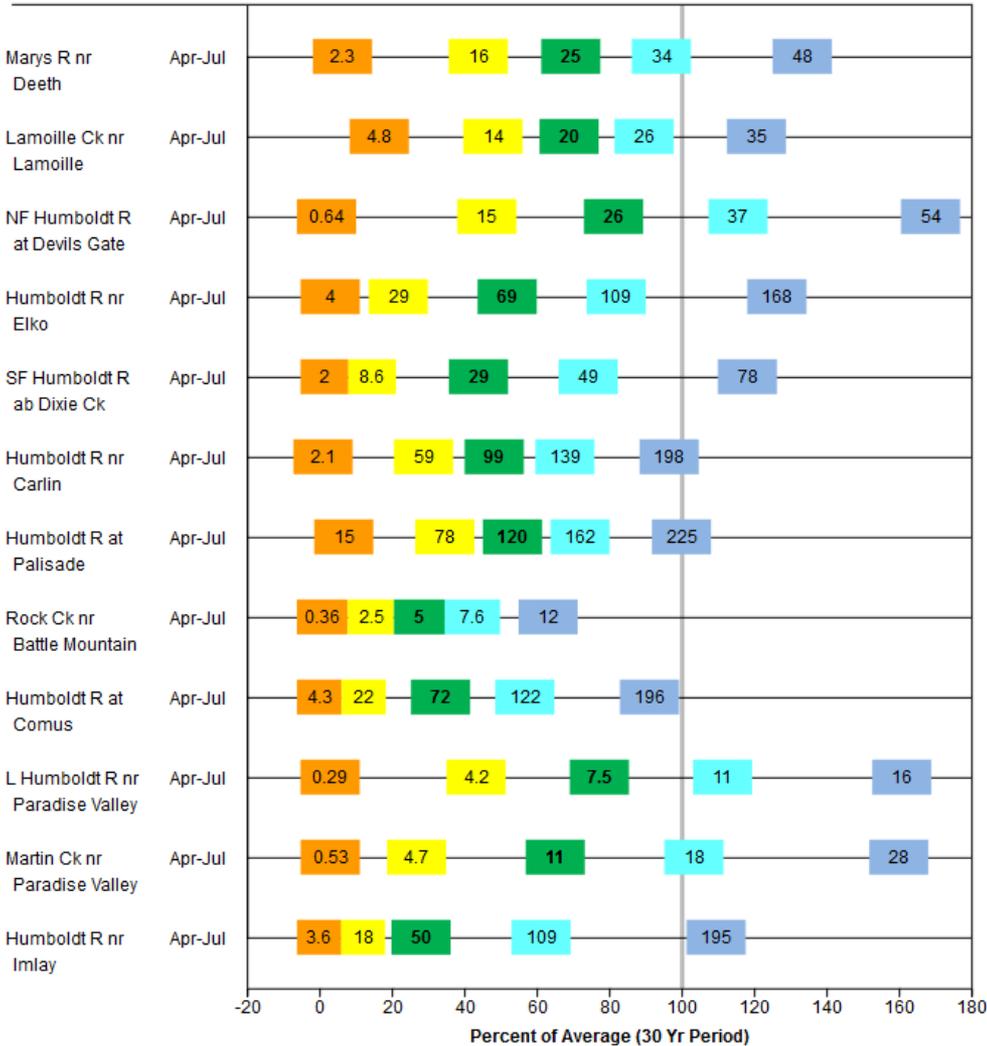
Humboldt River Summary

Water Supply Forecasts

January 1, 2018

Forecast Exceedance Probabilities and Volumes

<----- Drier ----- Future Conditions ----- Wetter ----->
 Box labels on chart are volumes of water in thousand acre-feet.



For most main stem Humboldt River points only 10% exceedance is near average for Apr-Jul Period

Colored boxes are 5 exceedance forecasts - Numbers in box are KAF

90% Exceedance Forecast (KAF)	70% Exceedance Forecast (KAF) There is a 70% chance that flows will exceed this volume	50% Exceedance Forecast (KAF) There is a 50% chance that flows will exceed this volume	30% Exceedance Forecast (KAF) There is a 30% chance that flows will exceed this volume	10% Exceedance Forecast (KAF)
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For an detailed explanation of this graphic visit: https://www.nrcs.usda.gov/wps/PA_NRCSCconsumption/download?cid=nrcseprd1371355&ext=pdf

Eastern Sierra Basin Summary

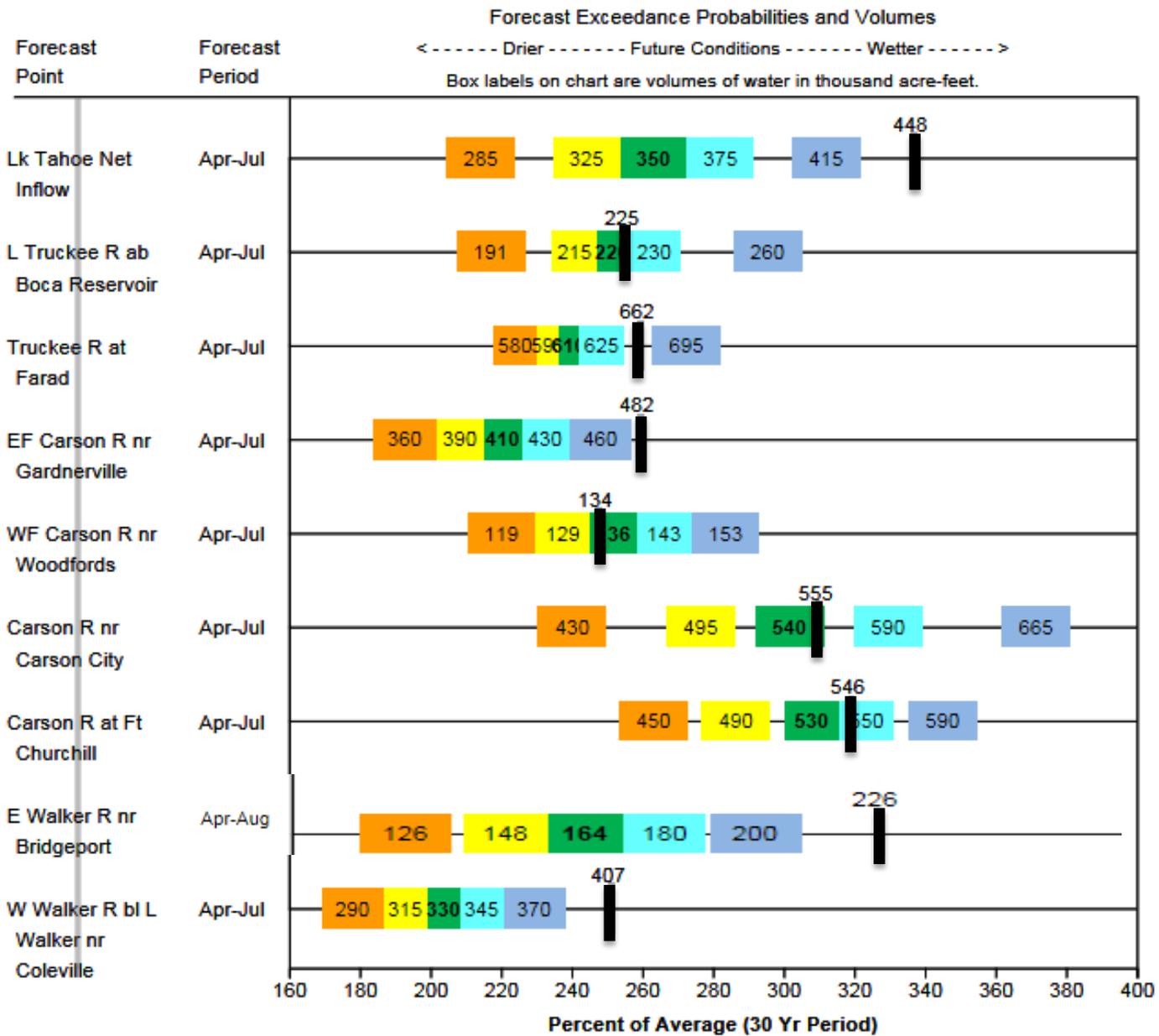
Water Supply Forecasts

April 1, 2017



2017 Forecast Review

Same tool displays observed flow for past years



Humboldt River Summary

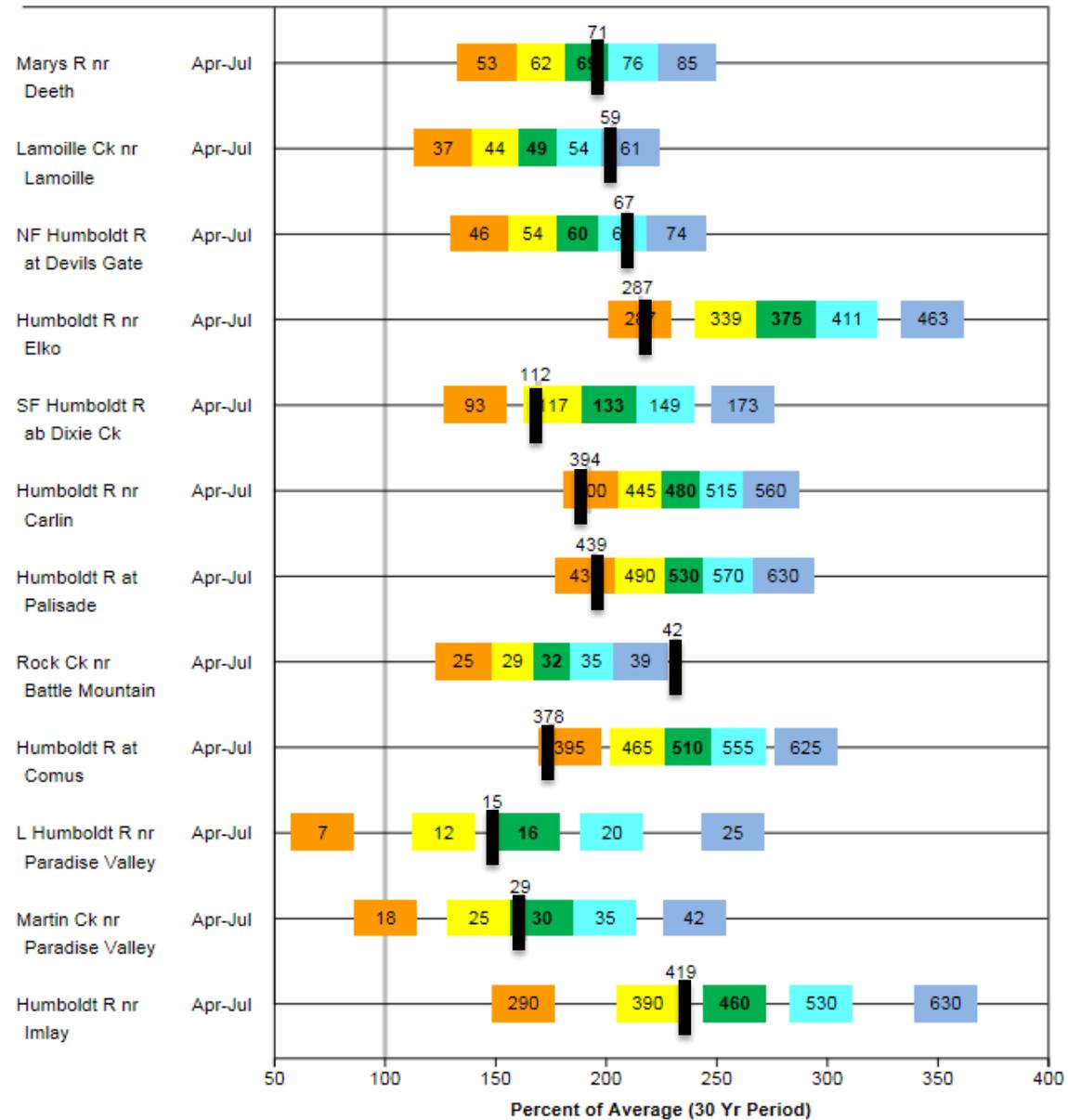
Water Supply Forecasts

April 1, 2017

Forecast Exceedance Probabilities and Volumes

<----- Drier ----- Future Conditions ----- Wetter ----->

Box labels on chart are volumes of water in thousand acre-feet.

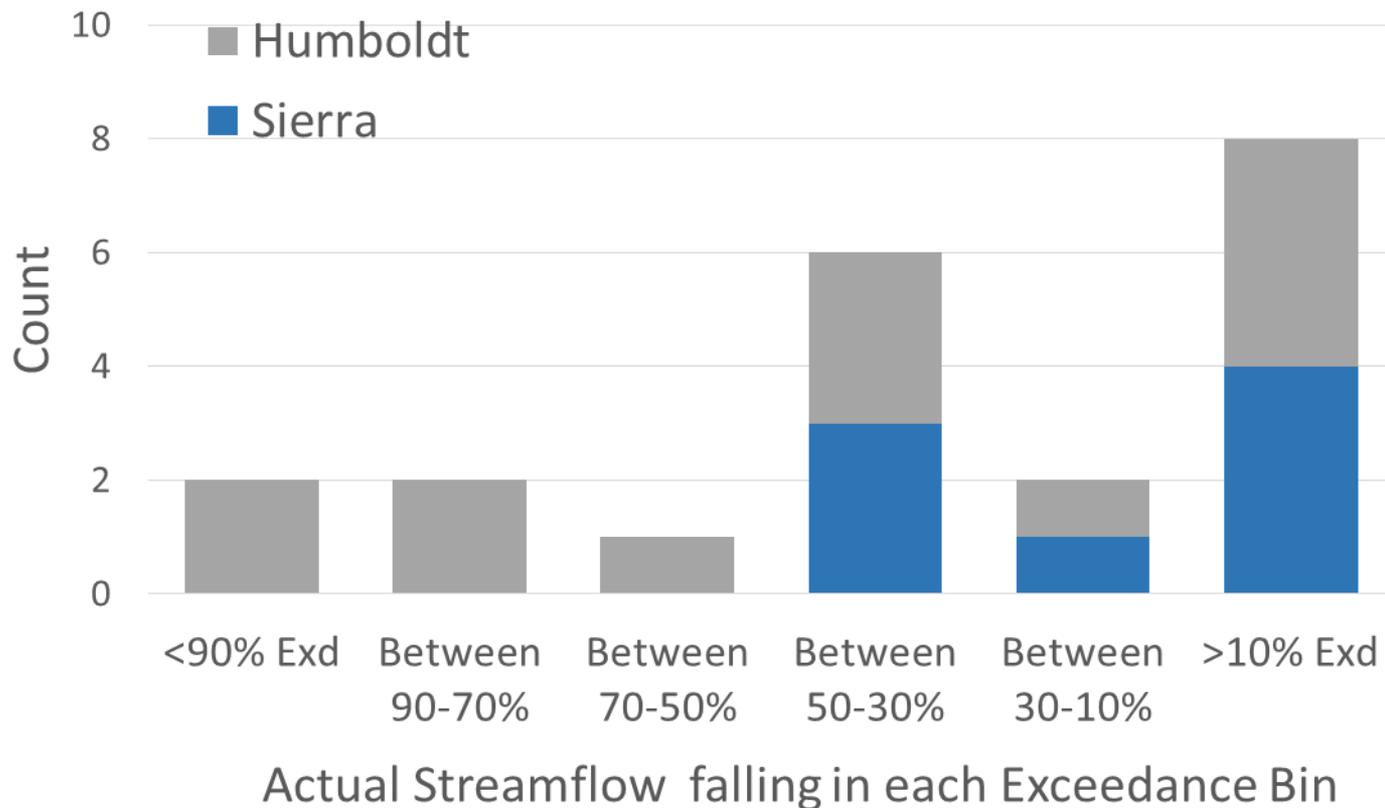




Eastern Sierra and Humboldt River Basin

2017 Streamflow Forecast Review

Based on Actual Streamflow vs April 1, 2017 NRCS Streamflow Forecasts



Summary



Slow start combined with snow drought

- WY Precip 70-85% average, SWE 30-60% median
- Jan 1-11 precip near normal, but little new SWE.
- Sierra snowpack <8000ft is ~20% of median, near record low

Soil moisture has increased significantly with recent rain

- Lack of snowpack means a small sponge to soak up rain compared to last year.

Snow Recovery

- Statistically, <30% chance for SWE recovery by spring
- History shows low years tend to remain low, recovery unlikely.

Streamflow forecasts

- Plan for below average seasonal runoff this spring

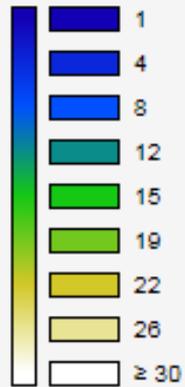




Bonus Slides

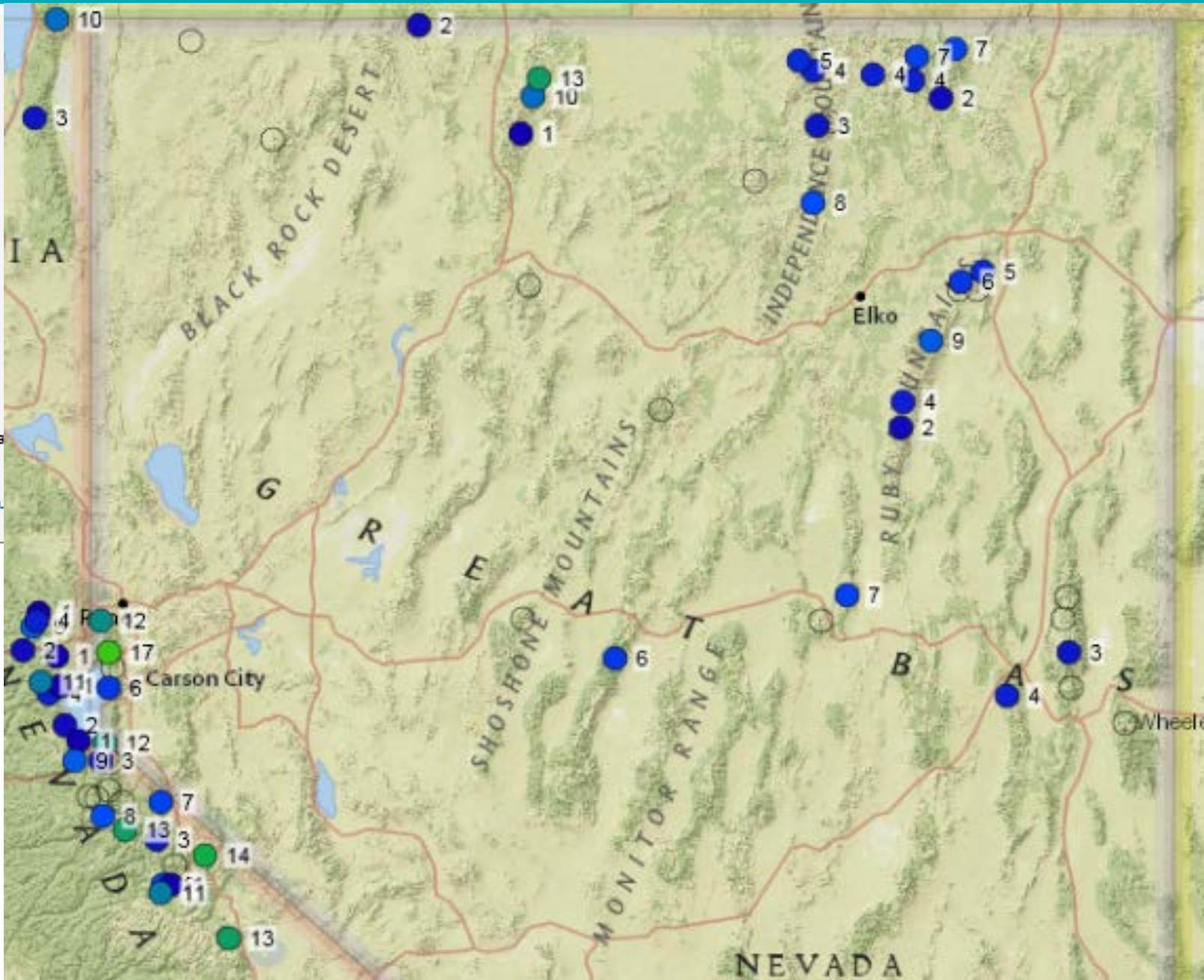


Snow Water Equivalent
Minimum Rank (POR)
January 11, 2018, first of
day



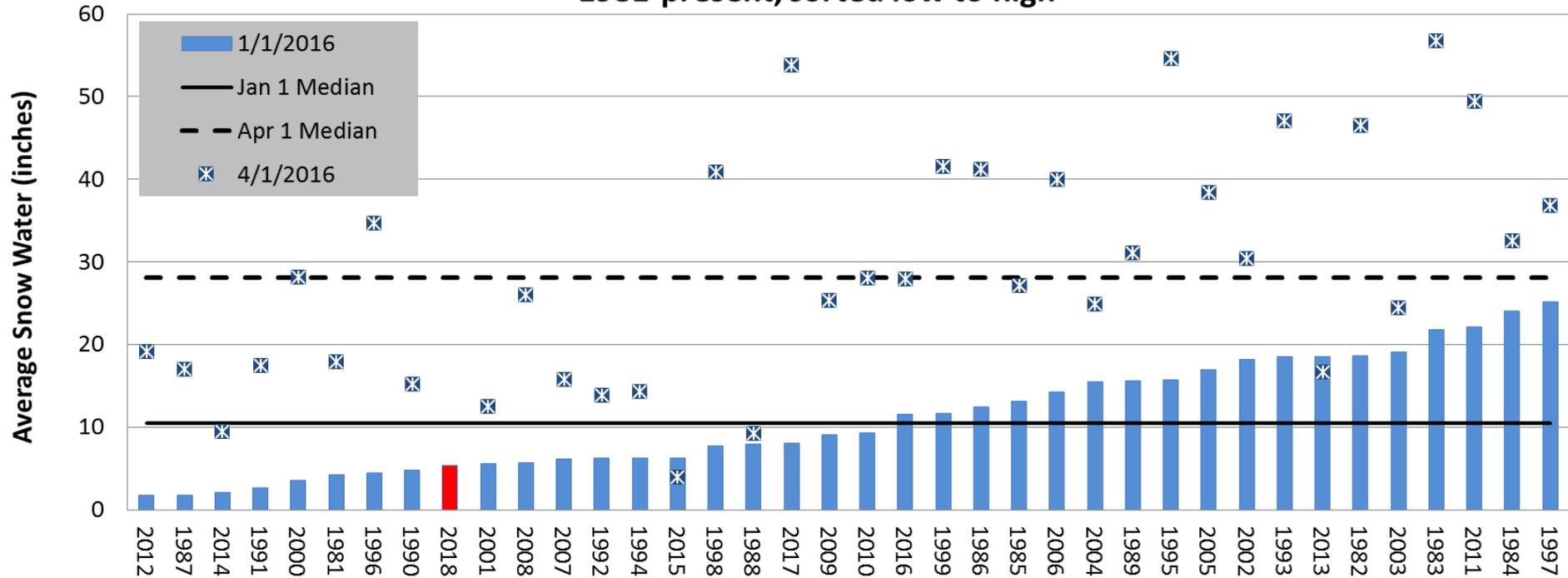
Sites with less than 20 years of data
or low variability excluded

Most sites
have
~37 years
of data





Average Snow Water in Truckee River Basin Jan 1 vs Apr 1 1981-present, sorted low to high





Average Snow Water in Walker River Basin Jan 1 vs Apr 1 1981-present, sorted low to high

