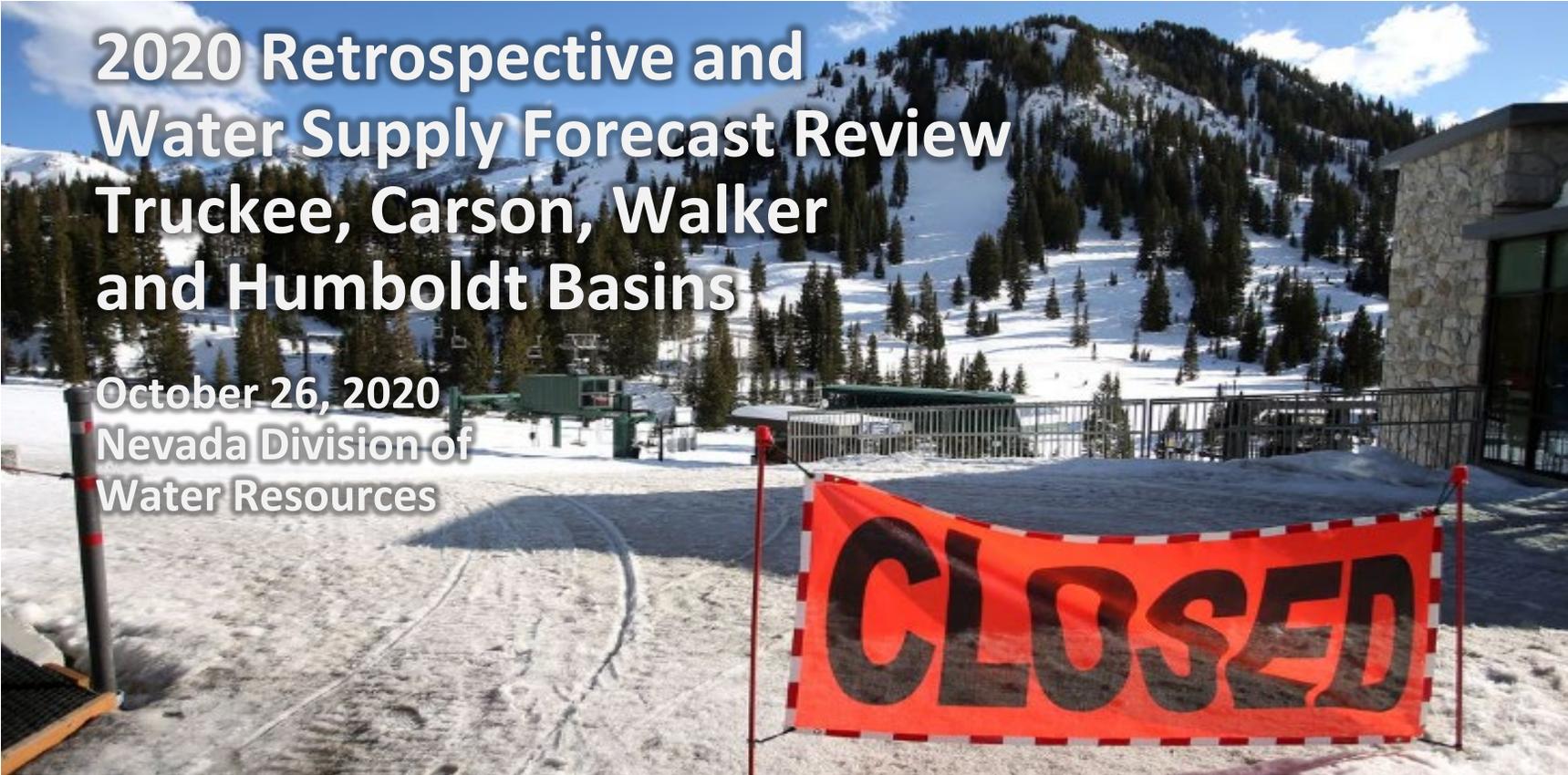




United States Department of Agriculture

2020 Retrospective and Water Supply Forecast Review Truckee, Carson, Walker and Humboldt Basins

October 26, 2020
Nevada Division of
Water Resources



Jeff Anderson
Hydrologist
NRCS Nevada Snow Survey
Reno, NV
Jeff.Anderson@usda.gov

Jolyne Lea P.H.
Hydrologist
NRCS National Water and Climate Center
Portland, OR
Jolyne.Lea@usda.gov



Natural
Resources
Conservation
Service

www.nrcs.usda.gov/wps/portal/nrcs/main/nv/snow/



Other NRCS Programs of note...

Water Management Entities are Eligible for Water Conservation Projects through the Environmental Quality Incentives Program (EQIP).

EQIP provides financial and technical assistance to agricultural producers to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, increased soil health and reduced soil erosion and sedimentation, improved or created wildlife habitat, and mitigation against increasing weather volatility.

The 2018 Farm Bill authorizes direct program assistance to irrigation districts, including acequias and other entities, for purposes of improving water use efficiencies. Each contract is limited to \$450,000, unless the Chief grants a waiver, which limits contracts to no more than \$900,000. NRCS may decline to select an EQIP application from a water conservation entity and irrigation efficiency projects with water management entities who are otherwise eligible if NRCS determines that the project is better suited to be implemented under the Regional Conservation Partnership Program. The Regional Conservation Partnership Program (RCPP) promotes coordination between

Next EQIP deadline – yet to be determined
RCPP Application Period extended through Nov 30, 2020.

Other Deadlines...

Wetland Reserve Enhancement Partnership (WREP) easements to help protect and restore critical wetlands on agricultural lands.

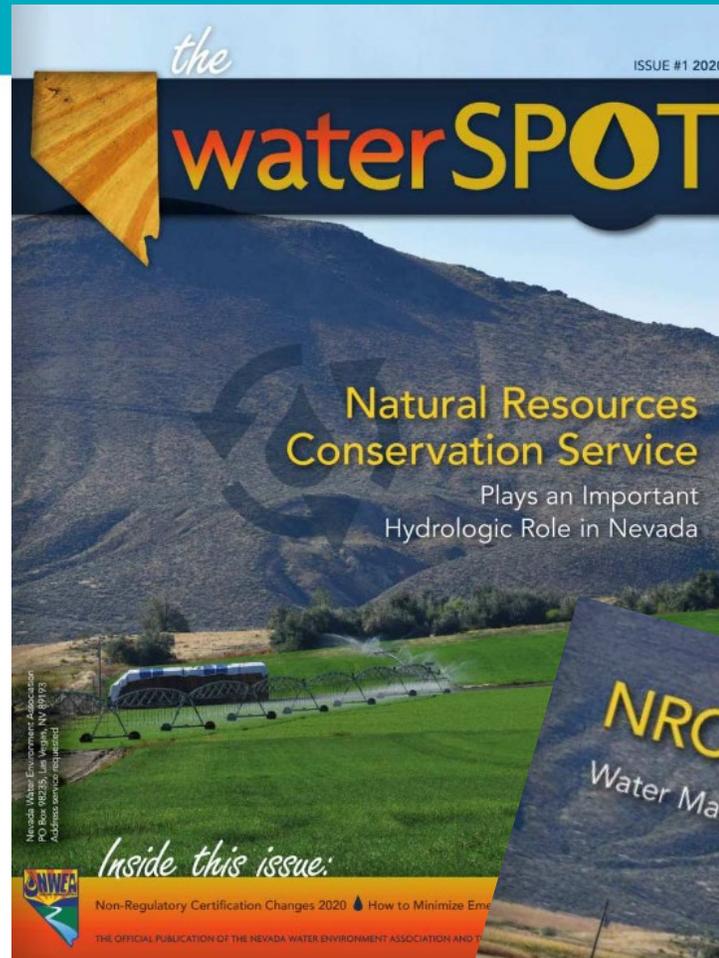
Open to State/Local Govt, Tribes, NGOs, and landowners

Proposals due Nov 30, 2020.

Contact your local NRCS Field Office for more information



<https://www.nrcs.usda.gov/wps/portal/nrcs/main/nv/contact/local/>



<http://www.nvwra.org/newsletter>



April 1, 2020 Snow Water Equivalent As Percent of Median

Snow Water Equivalent
Percent NRC S 1981-2010
Median
Beginning of April, 2020

- ≥ 150%
- 130% - 149%
- 110% - 129%
- 90% - 109%
- 70% - 89%
- 50% - 69%
- < 50%

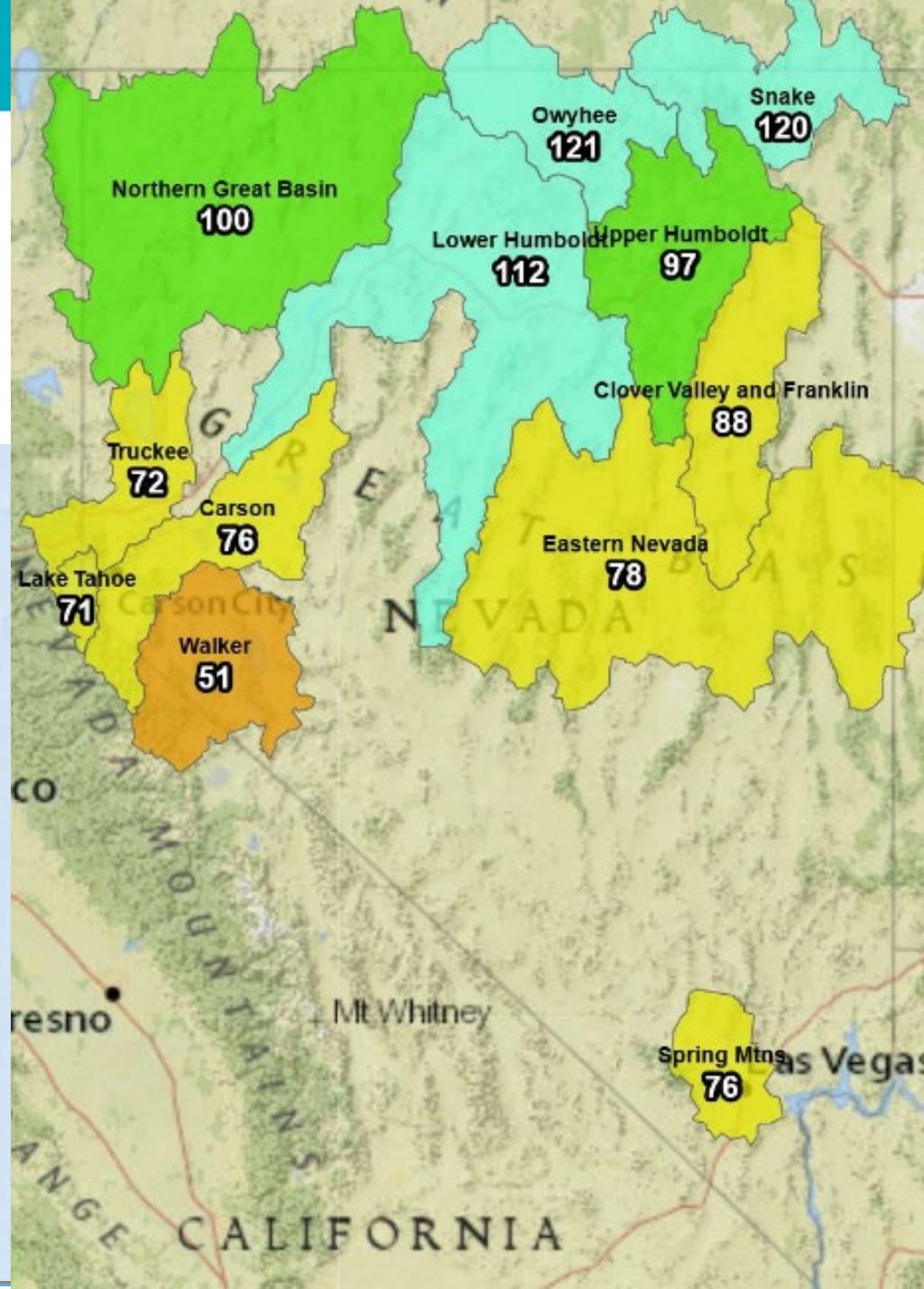
No basin value

Watershed Boundaries

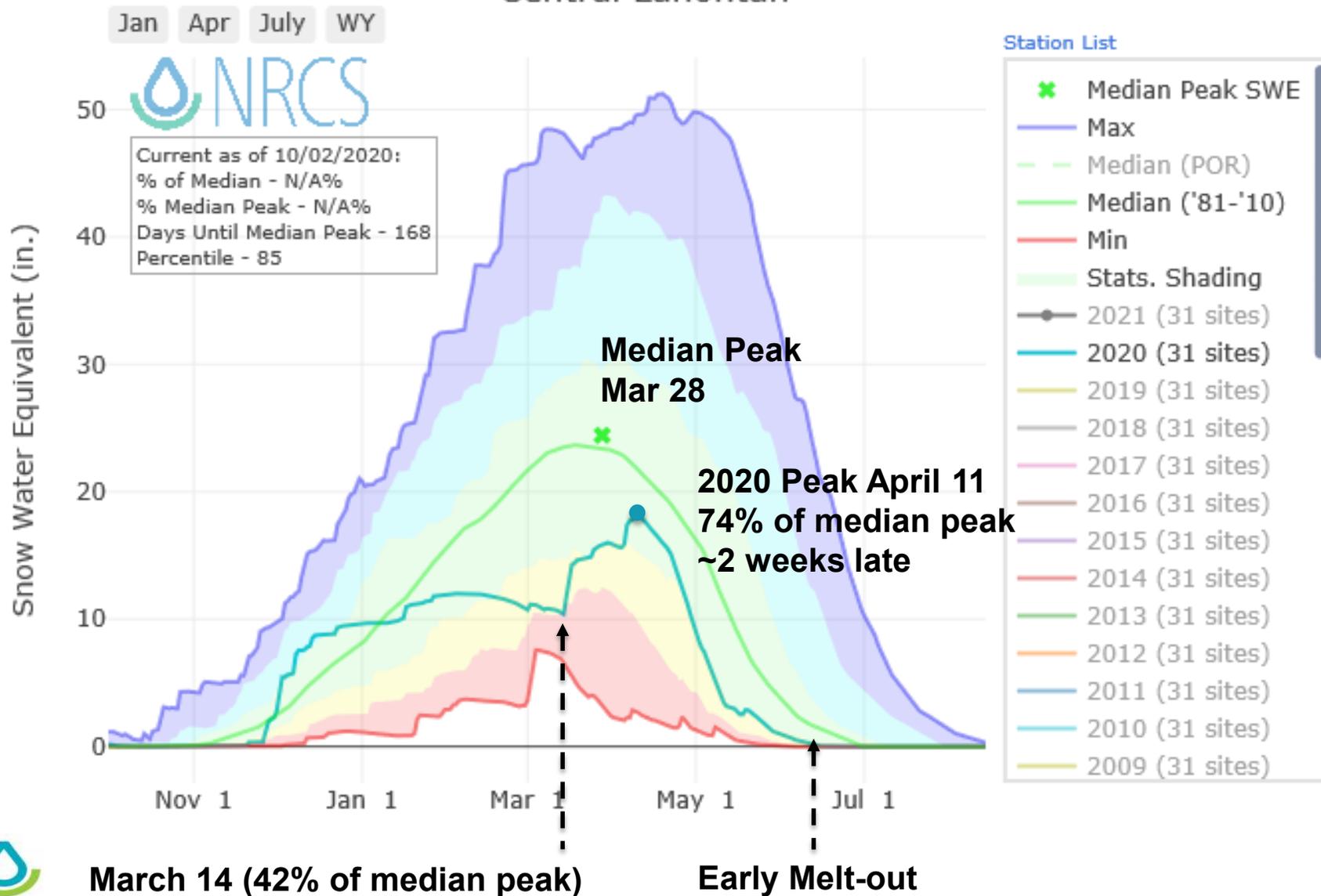
State Watersheds



Created 10-18-2020, 11:09 AM PDT



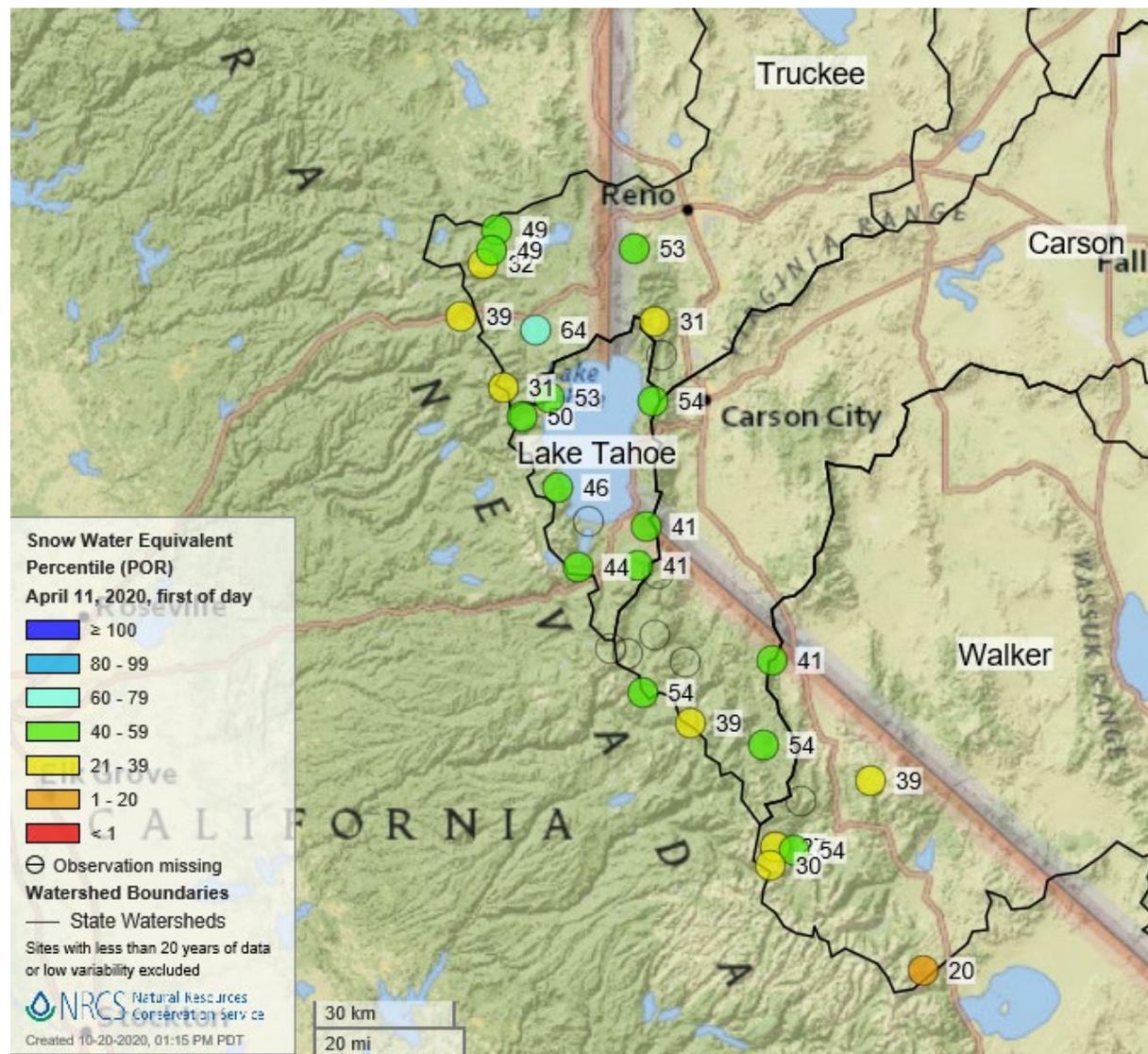
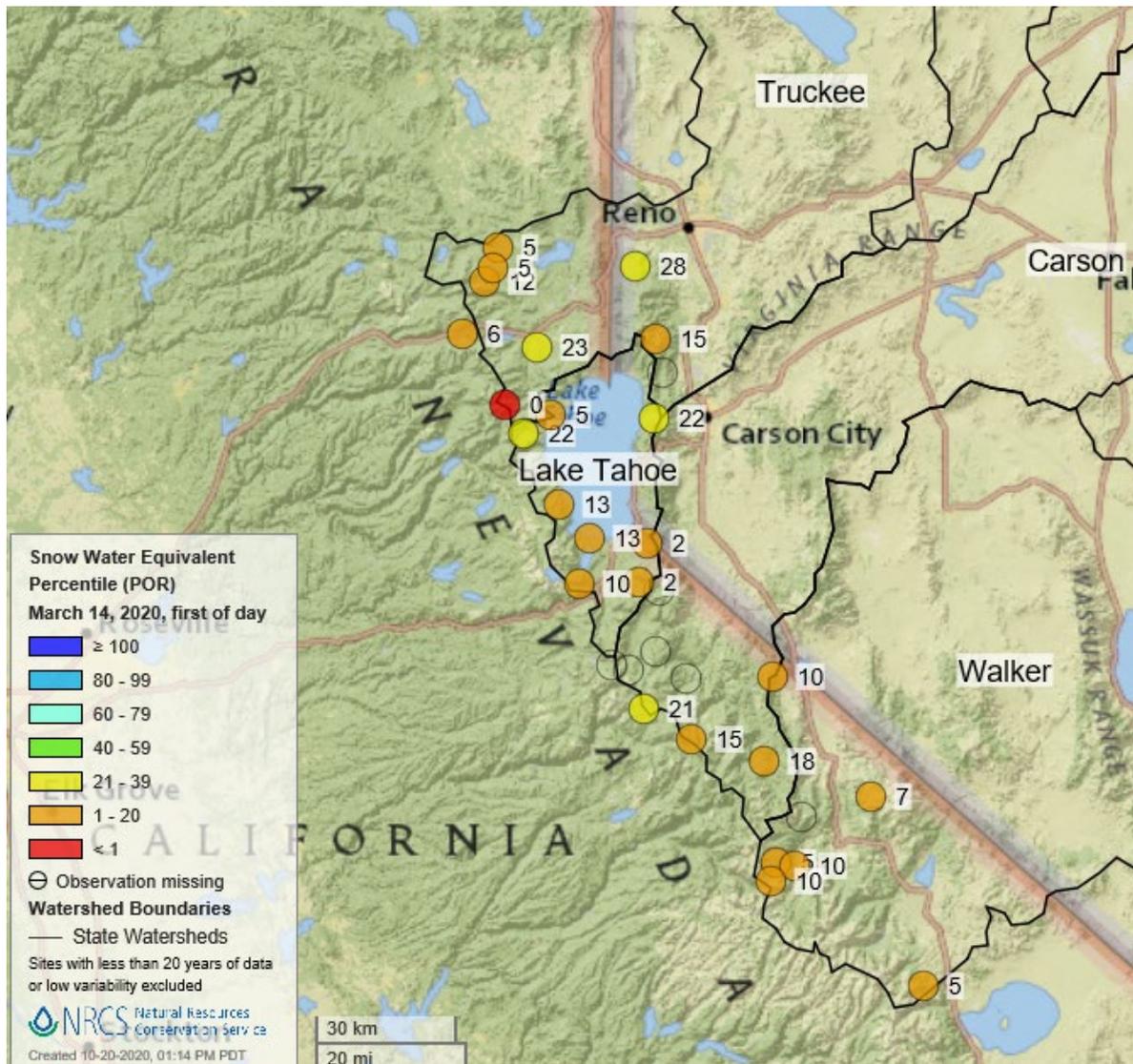
Snow Water Equivalent in Central Lahontan



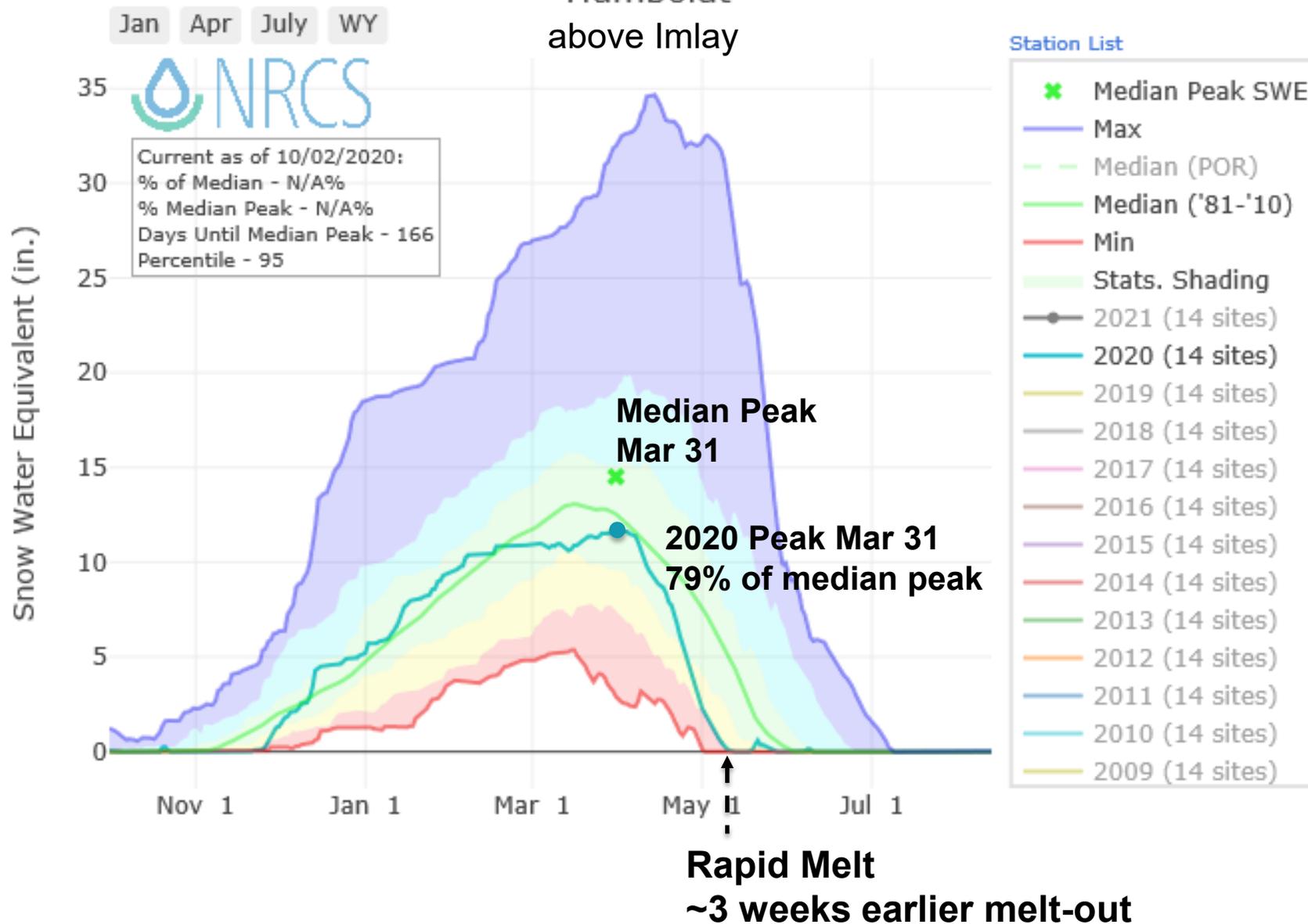
We missed a few April 1 snow course measurements due more to stormy flying weather, then because of COVID



“Corona Comeback”



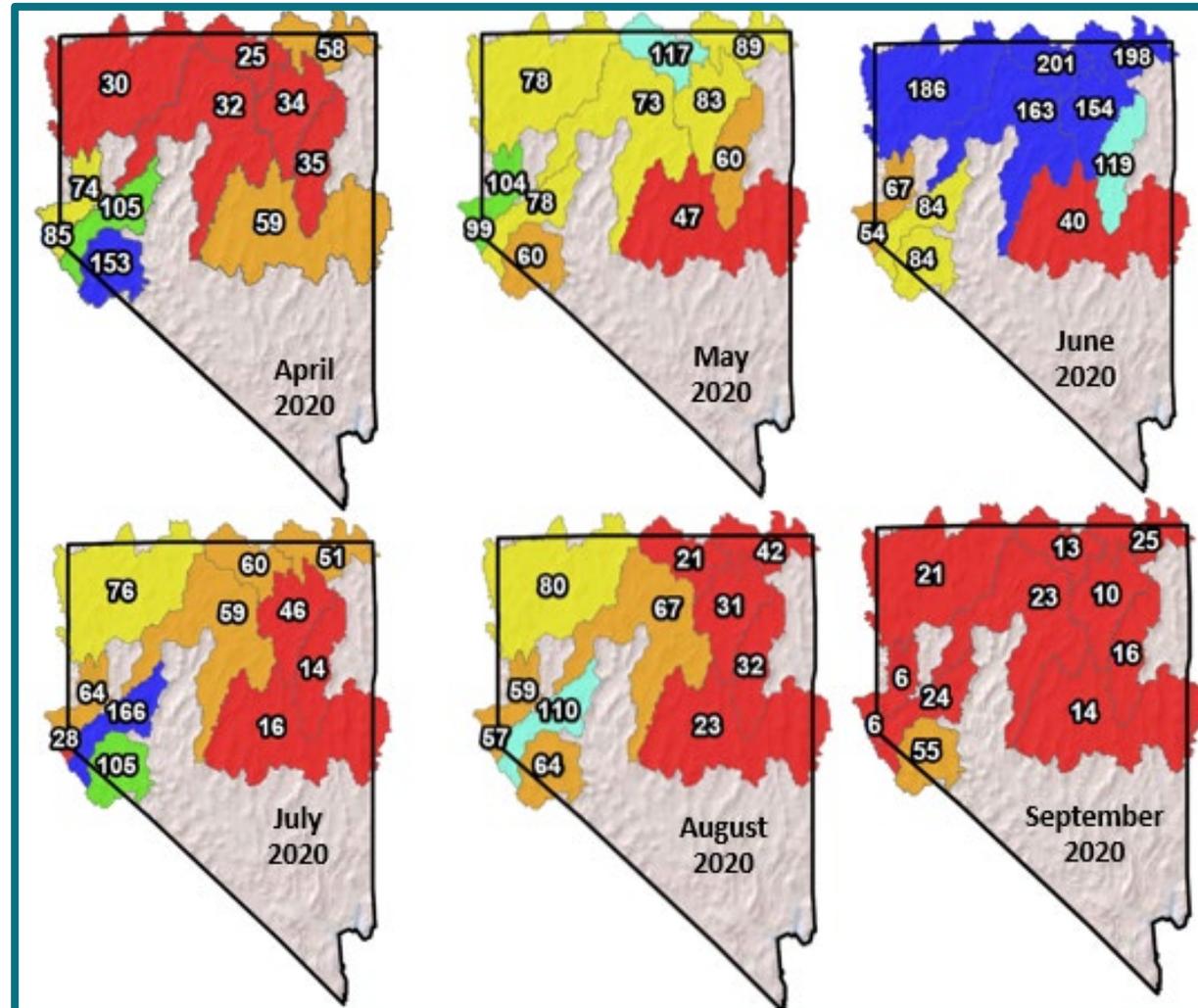
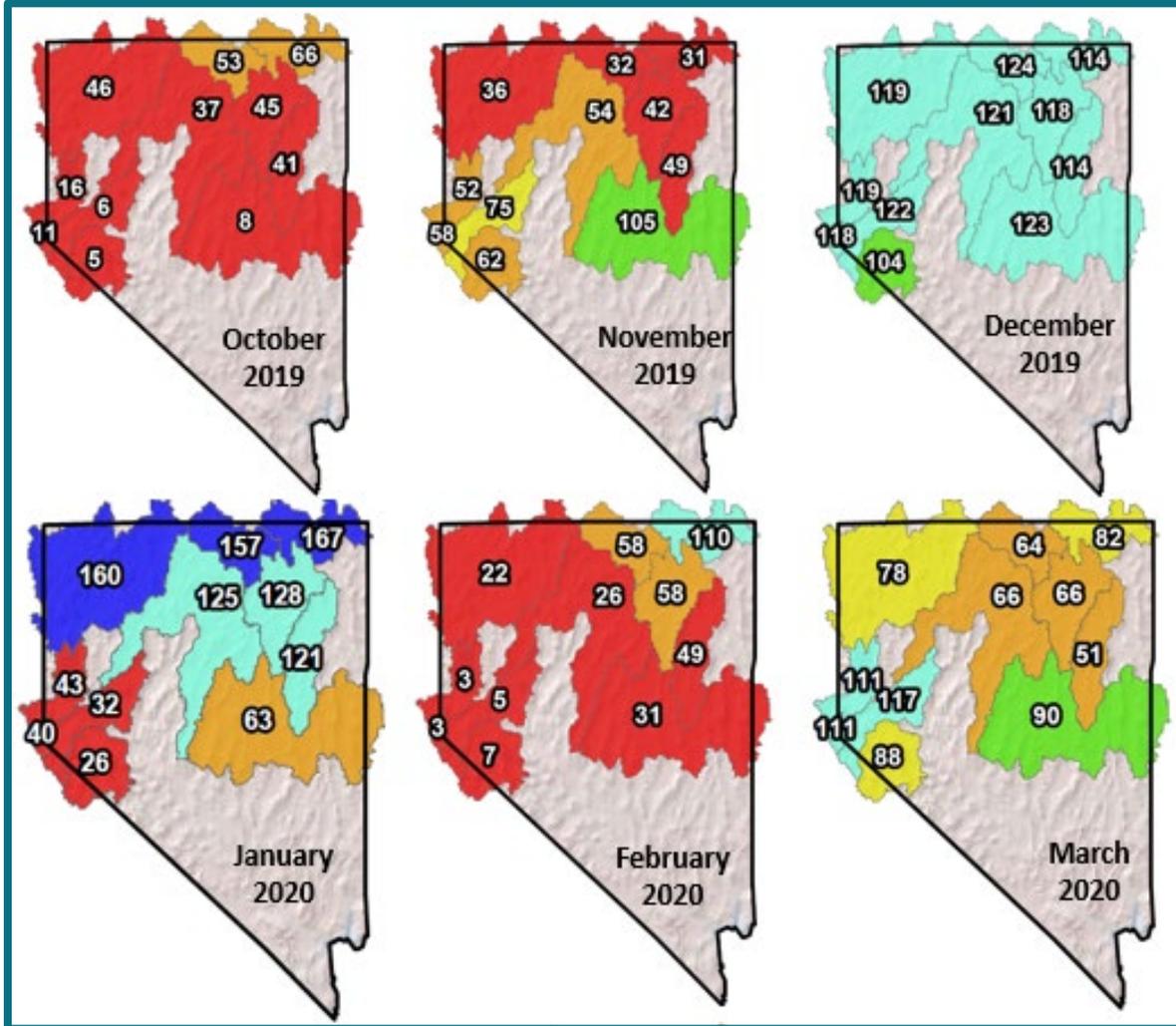
Snow Water Equivalent in Humboldt above Imlay



Monthly Precipitation as Percent of Average – Water Year 2020

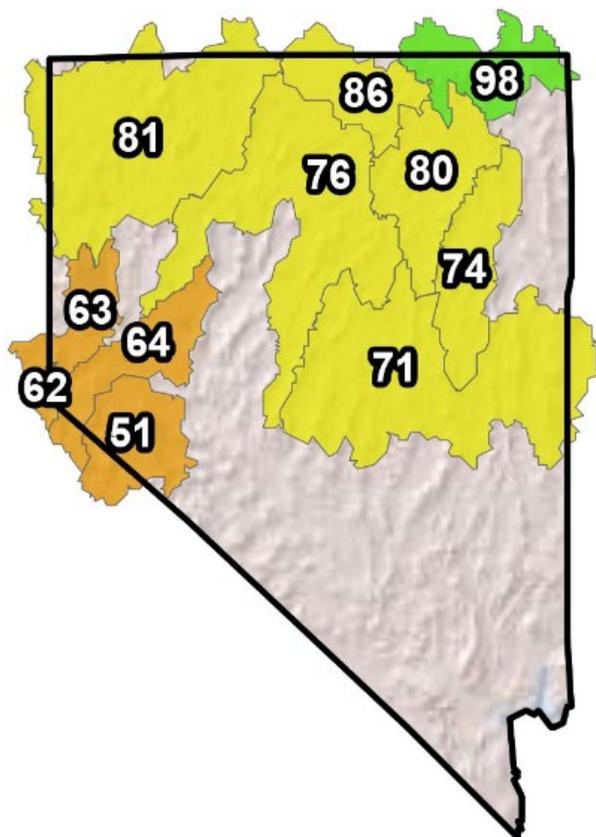
Fall / Winter

Spring / Summer

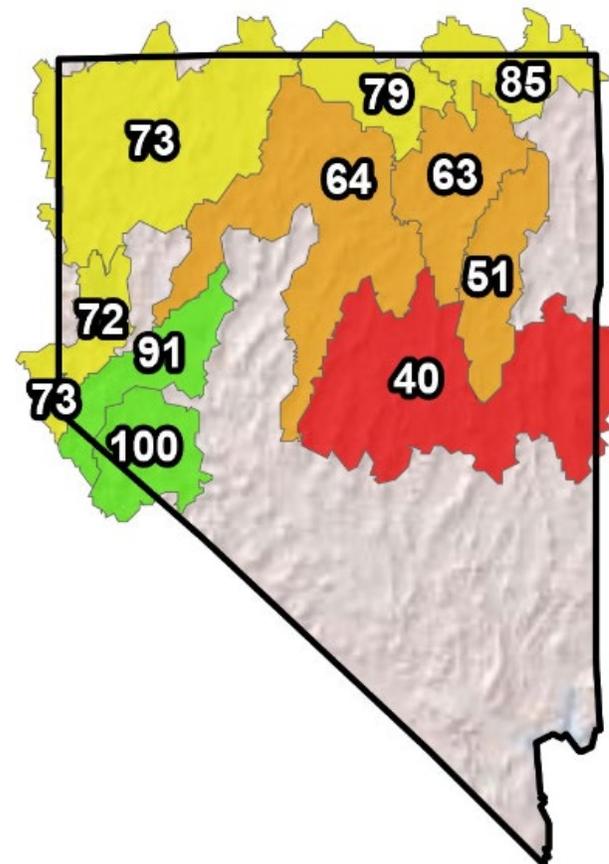


6-month Precipitation as Percent of Average – Water Year 2020

Fall / Winter = Oct - Mar



Spring / Summer = April - Sept

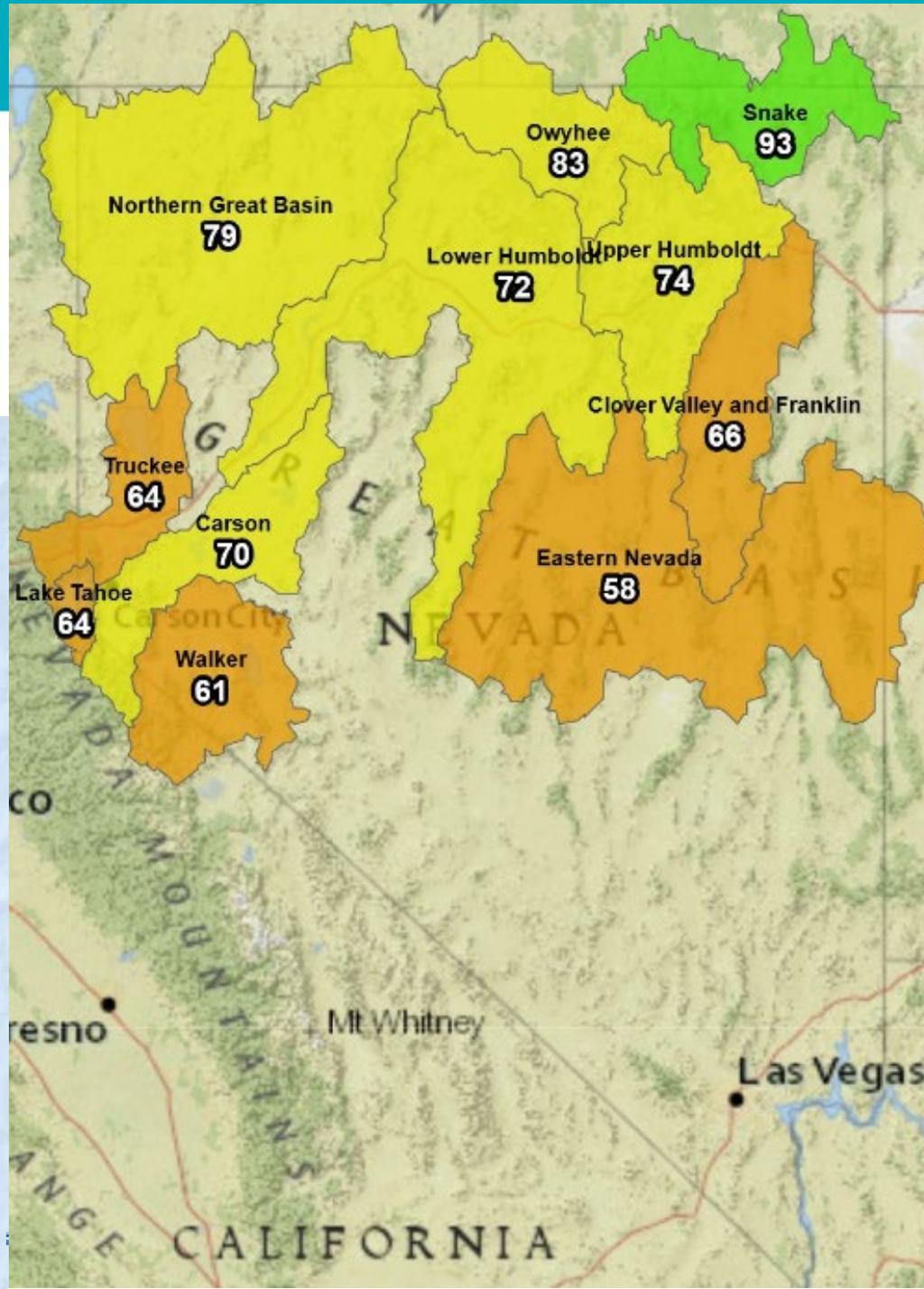


2020 Water Year Precipitation As Percent of Average

Water Year to Date
Precipitation
Percent NRCs 1981-2010
Average
October 1, 2019 through
September 30, 2020



Watershed Boundaries
— State Watersheds



2020 Water Year Precipitation Records

Water Year to Date
Precipitation
Records (POR)
October 1, 2019 through
September 30, 2020

- Highest
- 2nd Highest
- 2nd Lowest
- Lowest

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



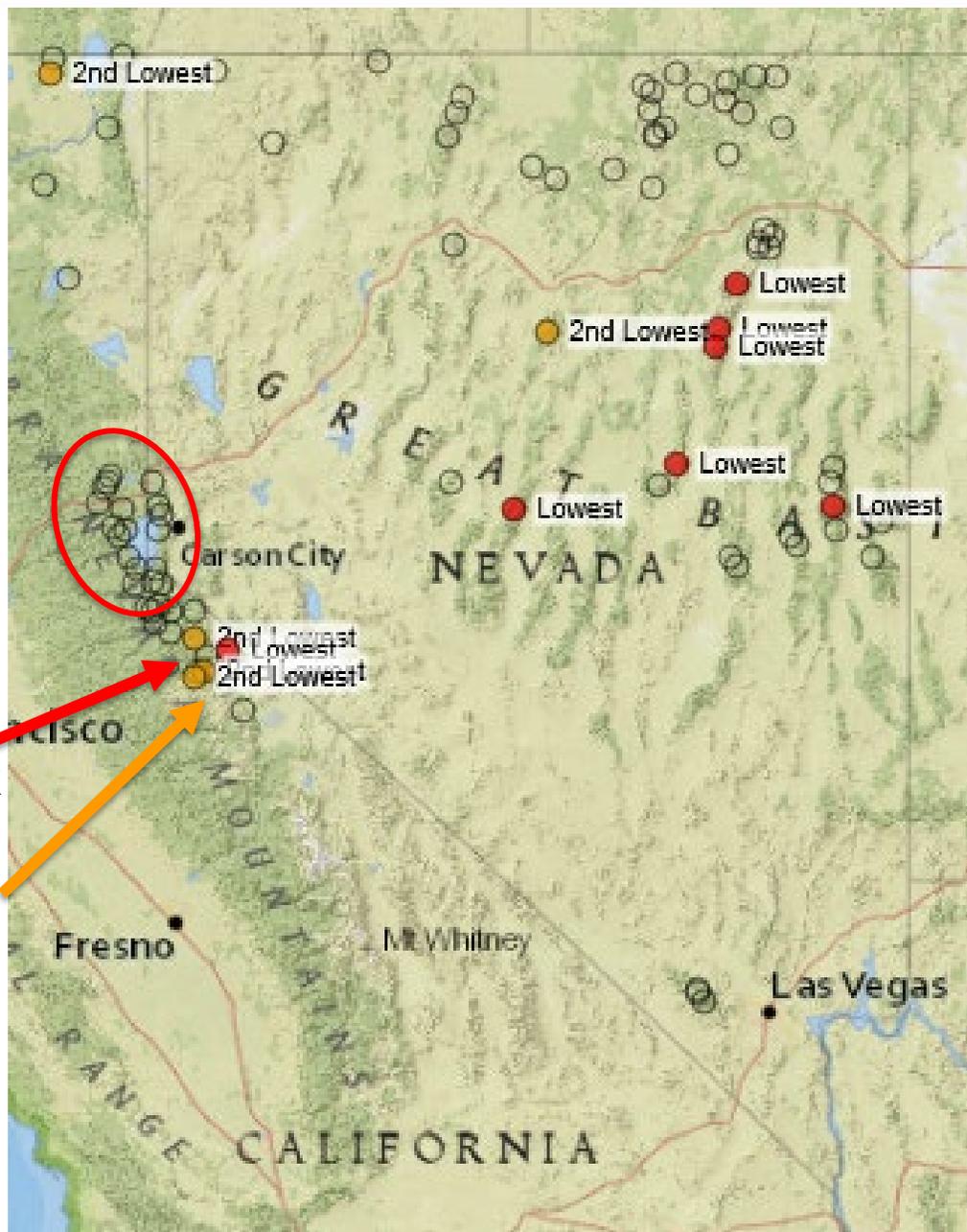
Created 10-20-2020, 12:25 PM PDT



~4th - 10th
driest yr since ~1981
<30th percentile
with a few
<10th percentile

Record dry at
Lobdell Lk

2nd Driest at
Leavitt Mdw,
Leavitt Lake,
Poison Flat



Record dry WY precip in Ruby Mtns

Lamoille #3
Green Mtn
Corral Canyon

2nd Driest
Lewis Peak (nr Battle Mtn)

Also Record Dry from
Austin to Ely
Big Creek Summit
Diamond Peak
Berry Creek

2020 April - July Runoff Summary as Percent of Average

Sierra Basins

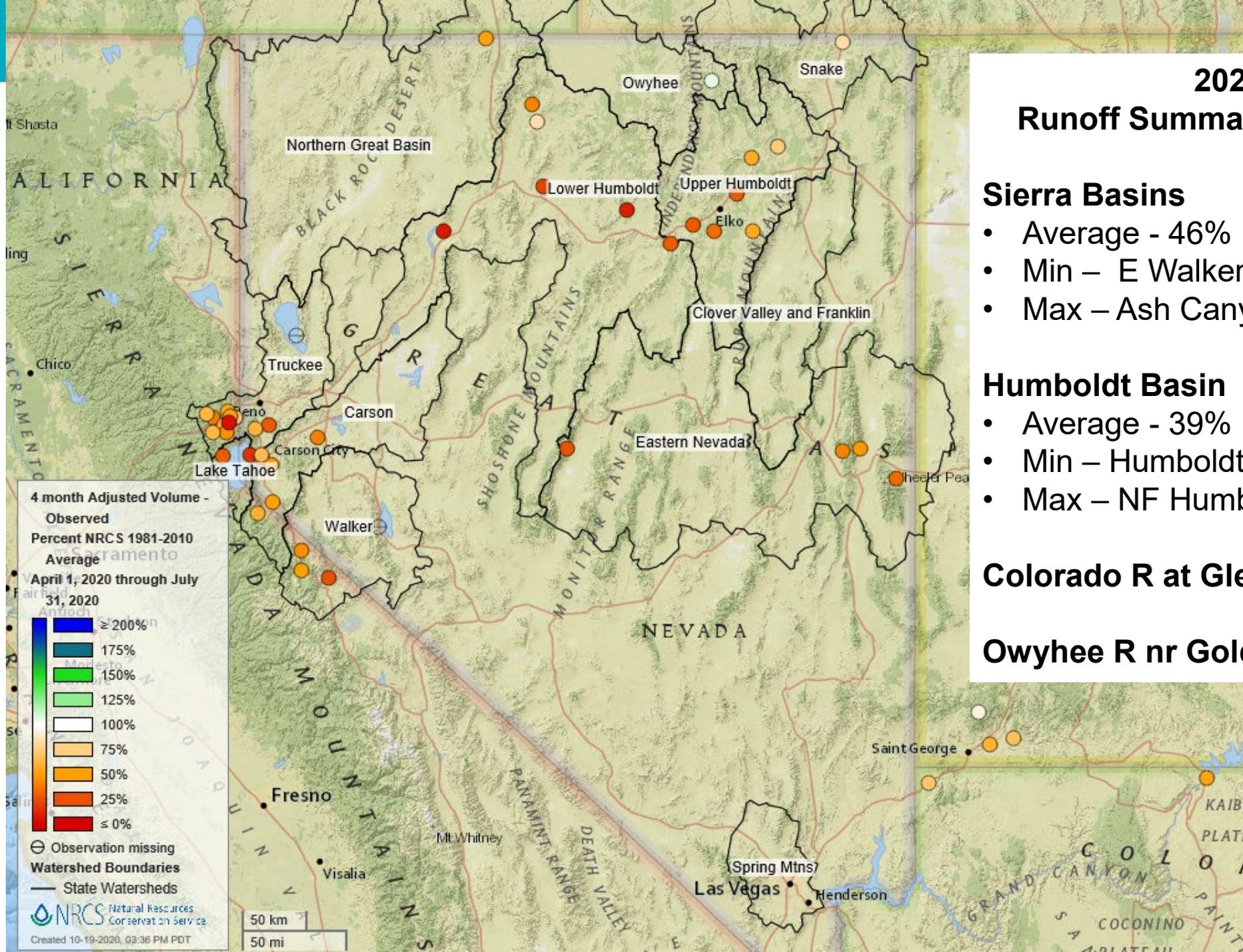
- Average - 46%
- Min – E Walker nr Bridgeport 25% Apr-Aug
- Max – Ash Canyon Ck nr Carson City 65%

Humboldt Basin

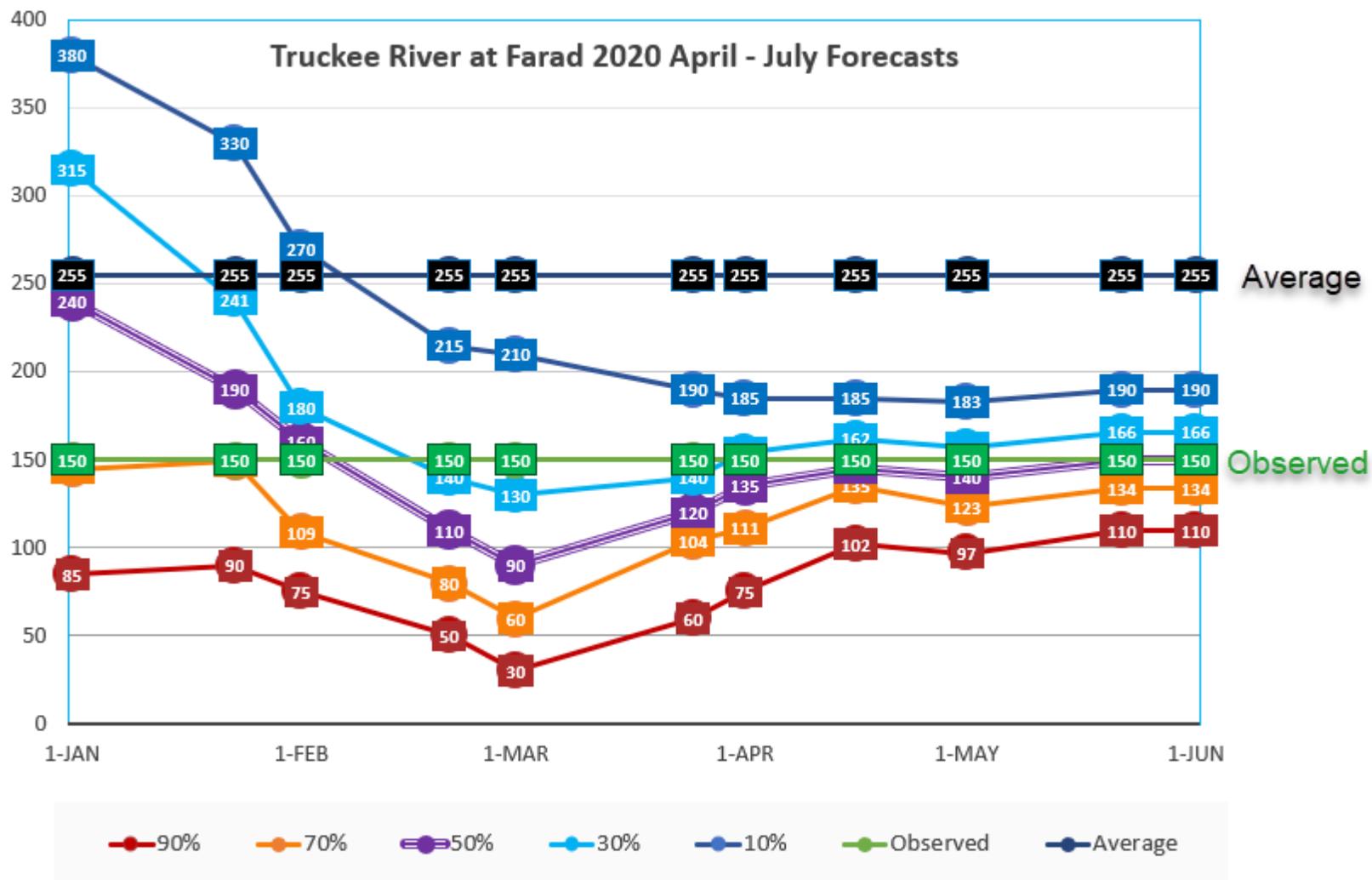
- Average - 39%
- Min – Humboldt R nr Imlay 8%
- Max – NF Humboldt R at Devils Gate 83%

Colorado R at Glen Canyon Dam - 53%

Owyhee R nr Gold Ck 106%

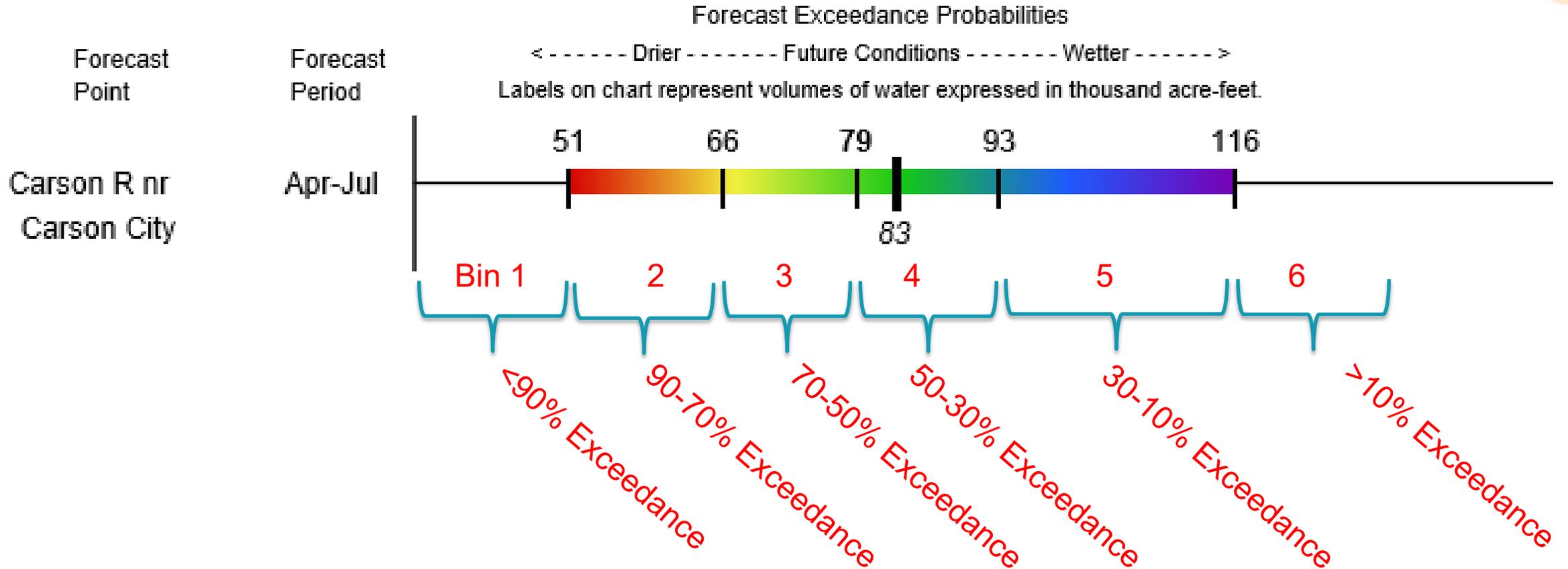


Forecast accuracy example





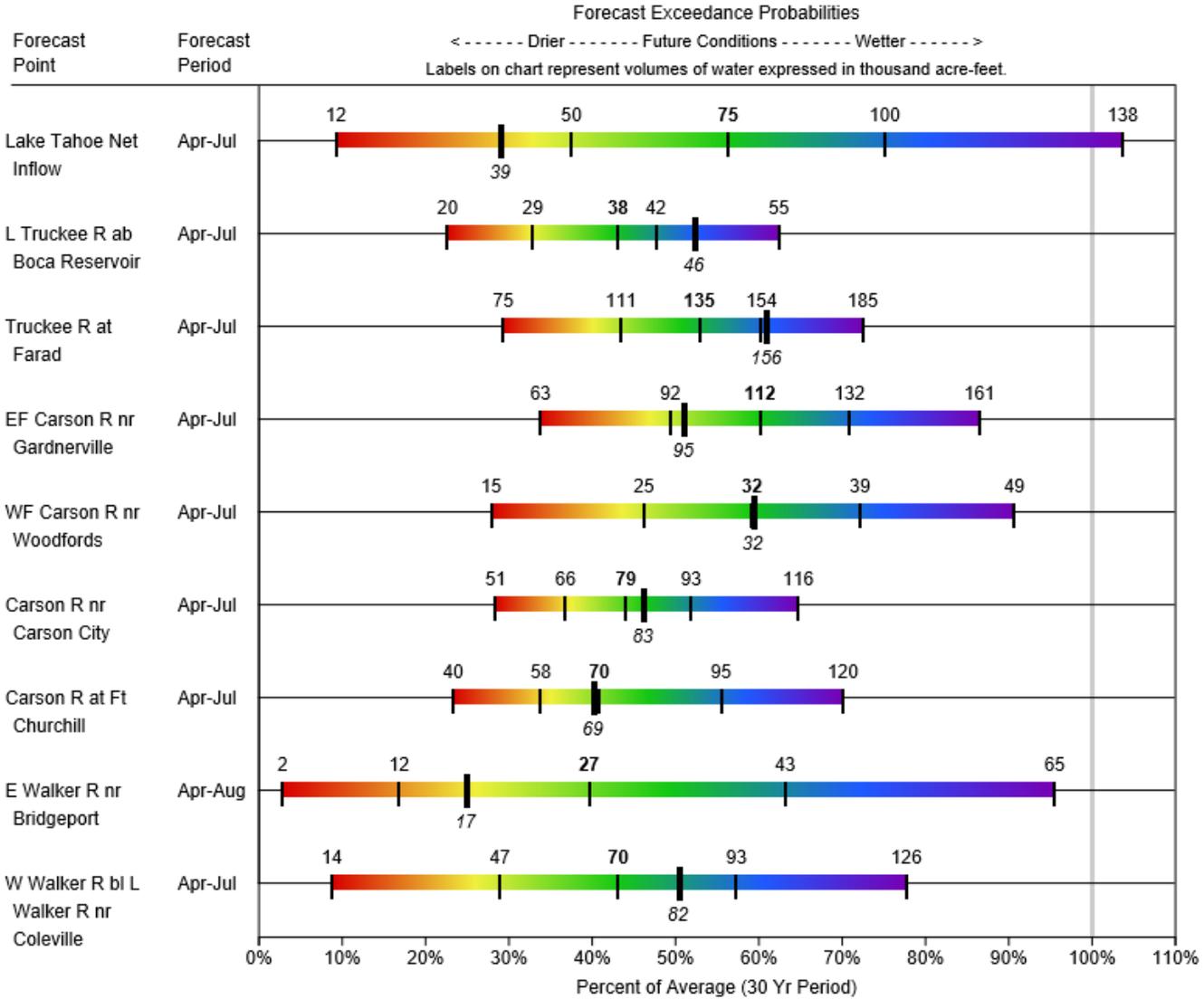
Each forecast is issued with 5 exceedance volumes



Observed Runoff falls into 1 of 6 Bins



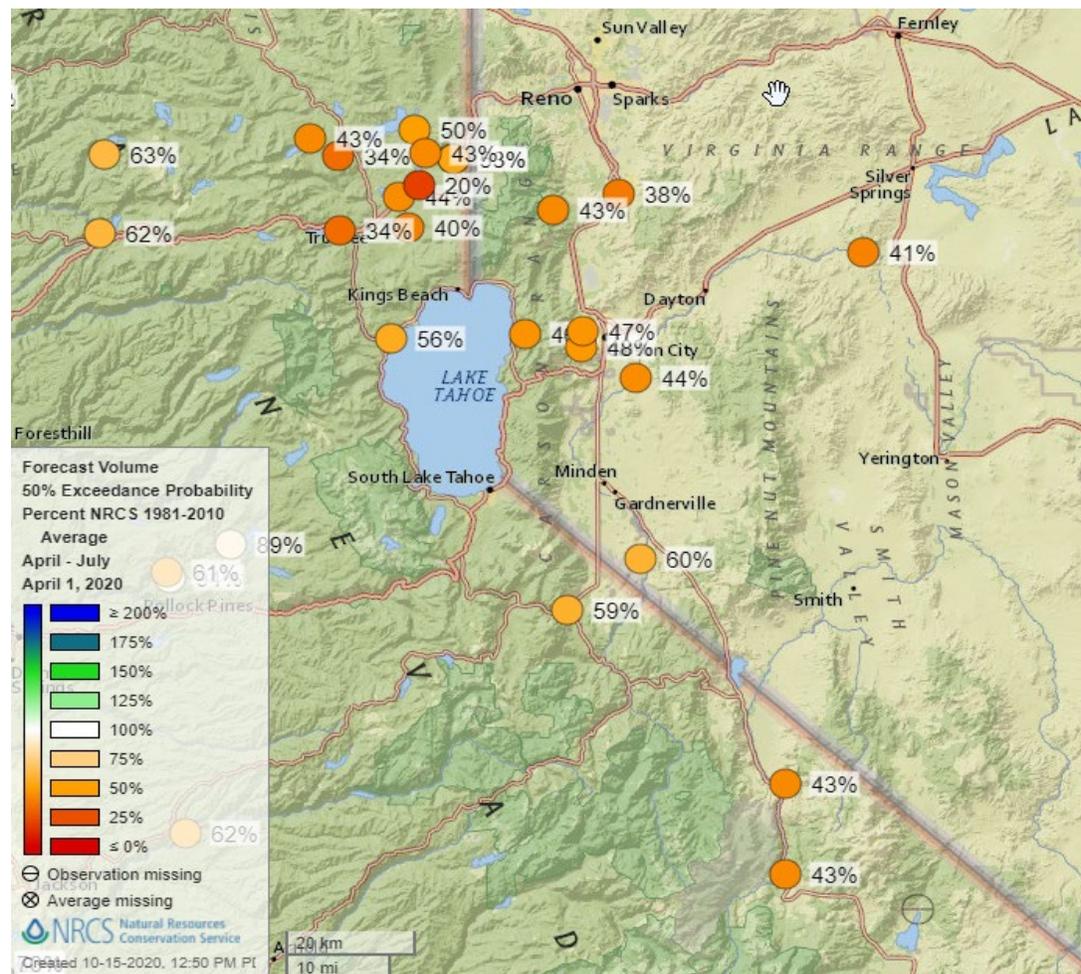
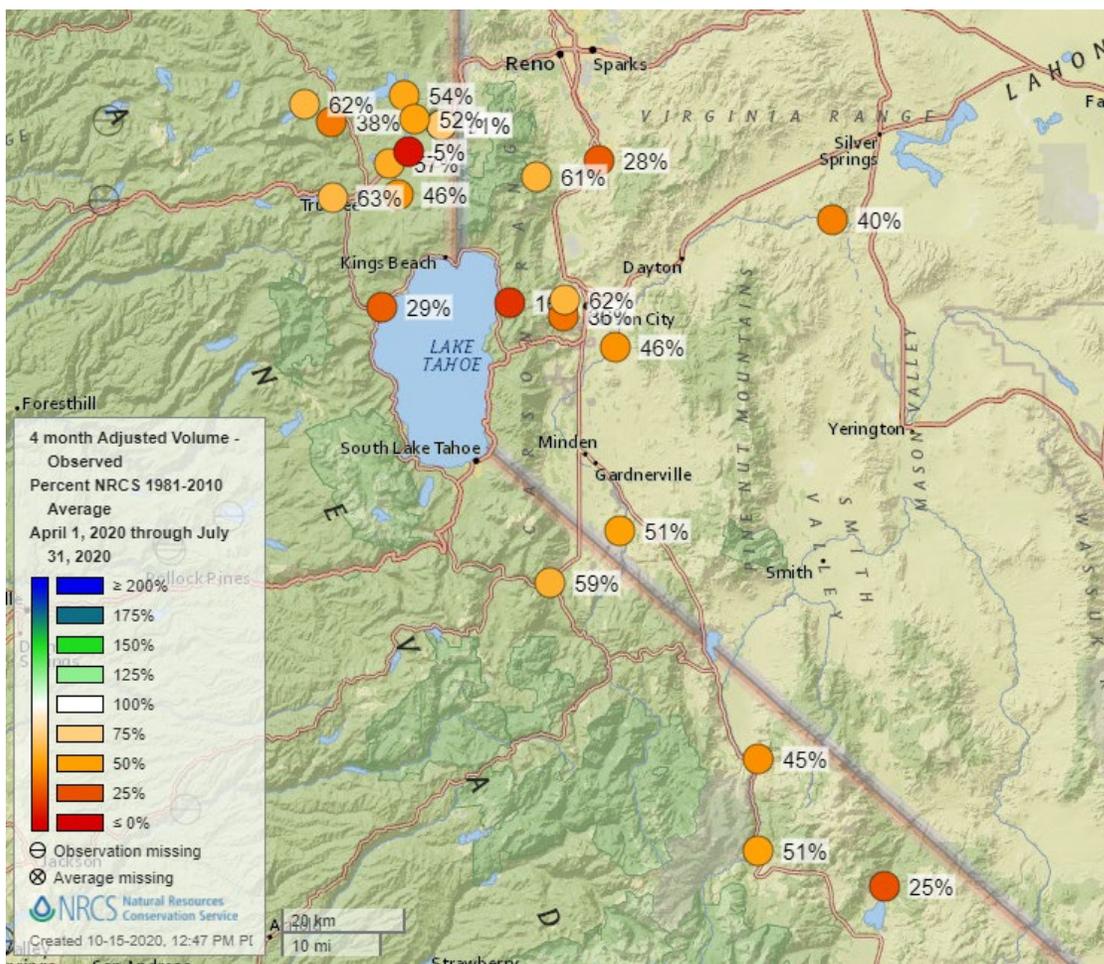
Eastern Sierra Basin Summary
Water Supply Forecasts
April 1, 2020



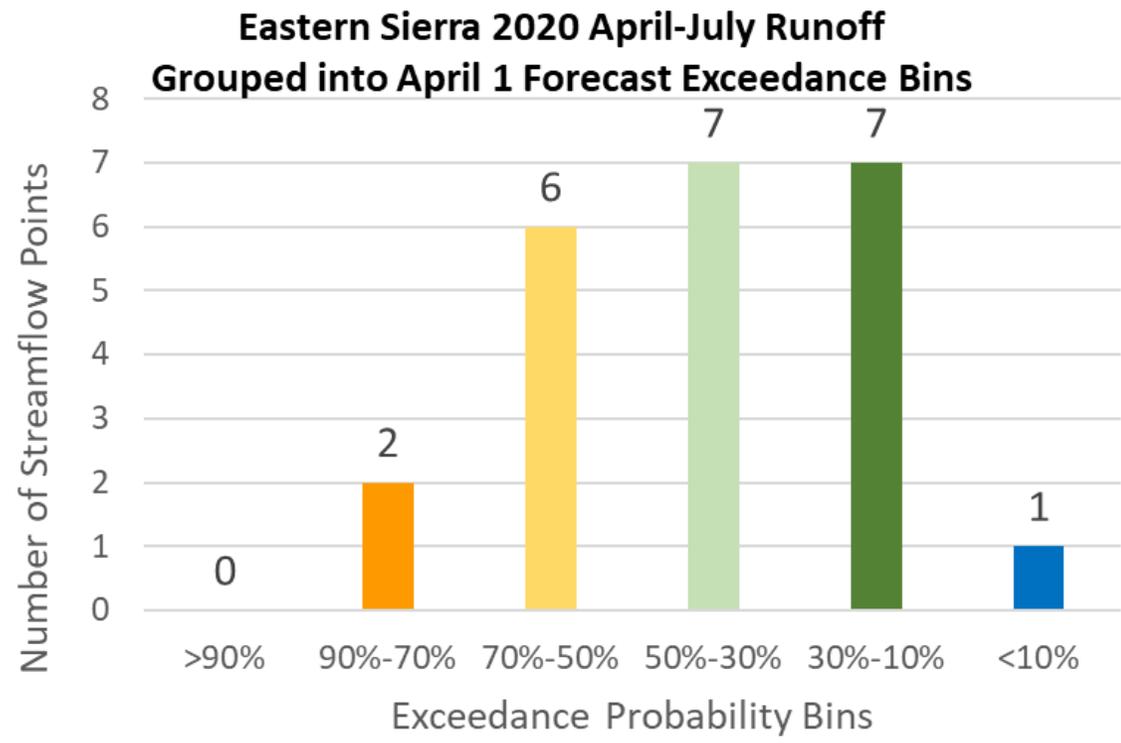
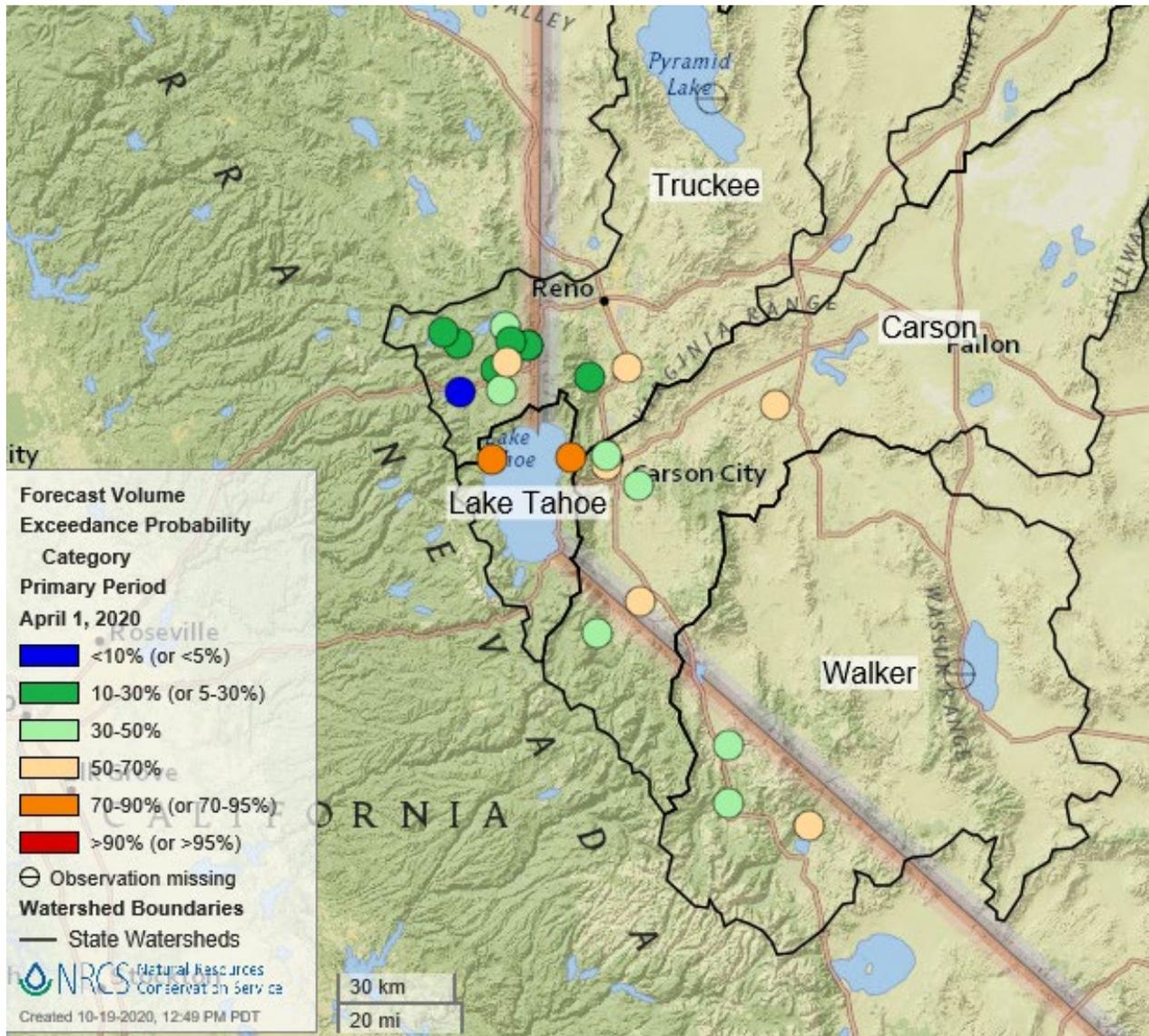
Generally in the Sierra Basins
Apr-July 2020 runoff was near
to slightly above the
50% exceedance forecast



Summary of observed flow percent of average and April 1 forecast percent of average

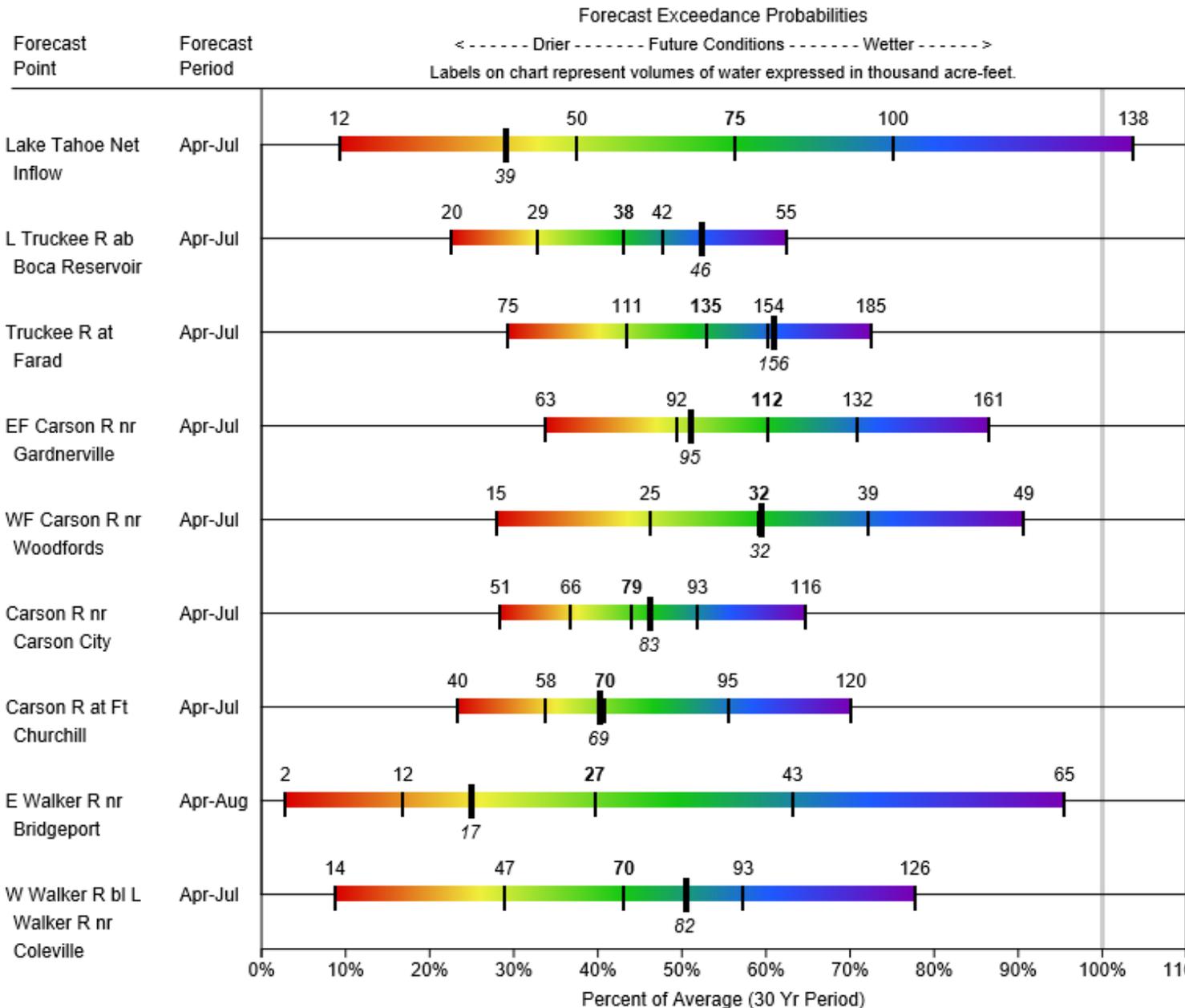


Sierra Basins

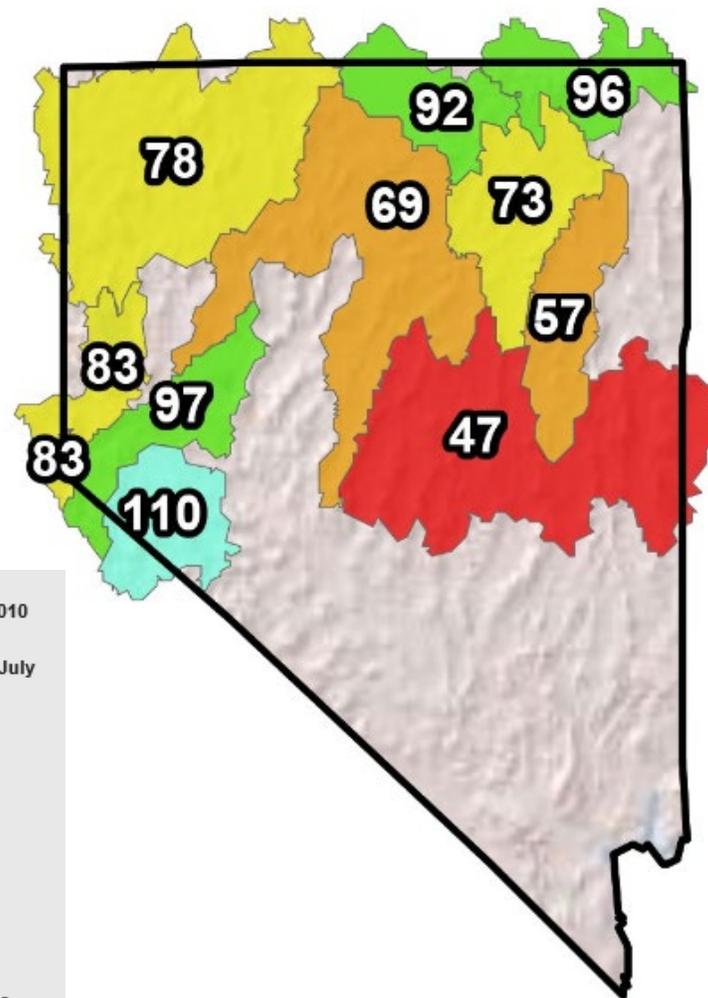


Observed streamflow generally centered around 50% exceedance with skew toward wetter (30-10% exceedance).

Eastern Sierra Basin Summary
Water Supply Forecasts
 April 1, 2020



April – July
Precipitation as % of Average



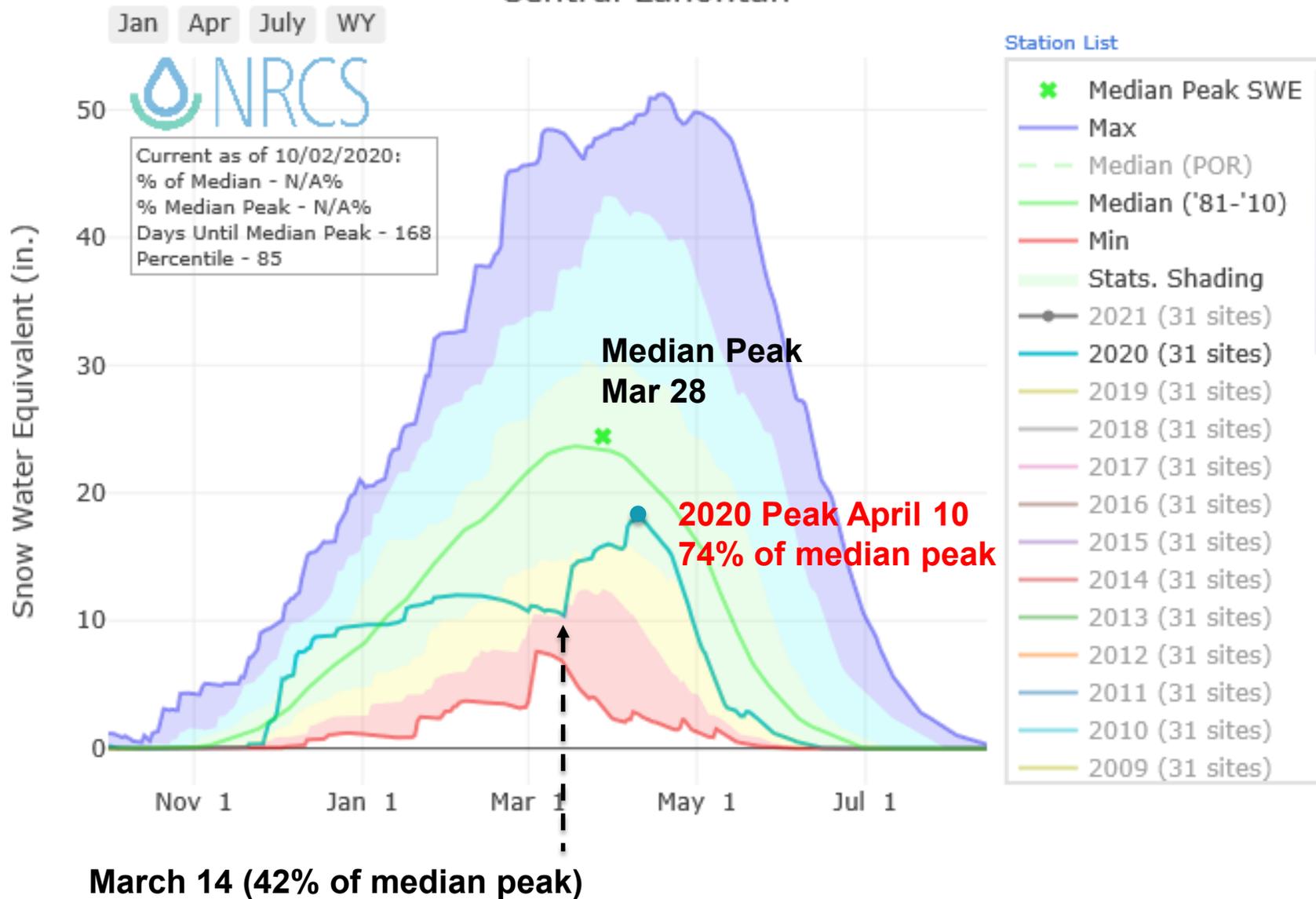
4 month Precipitation
 Percent NRCs 1981-2010
 Average
 April 1, 2020 through July
 31, 2020

- ≥ 150%
- 130% - 149%
- 110% - 129%
- 90% - 109%
- 70% - 89%
- 50% - 69%
- < 50%
- No basin value

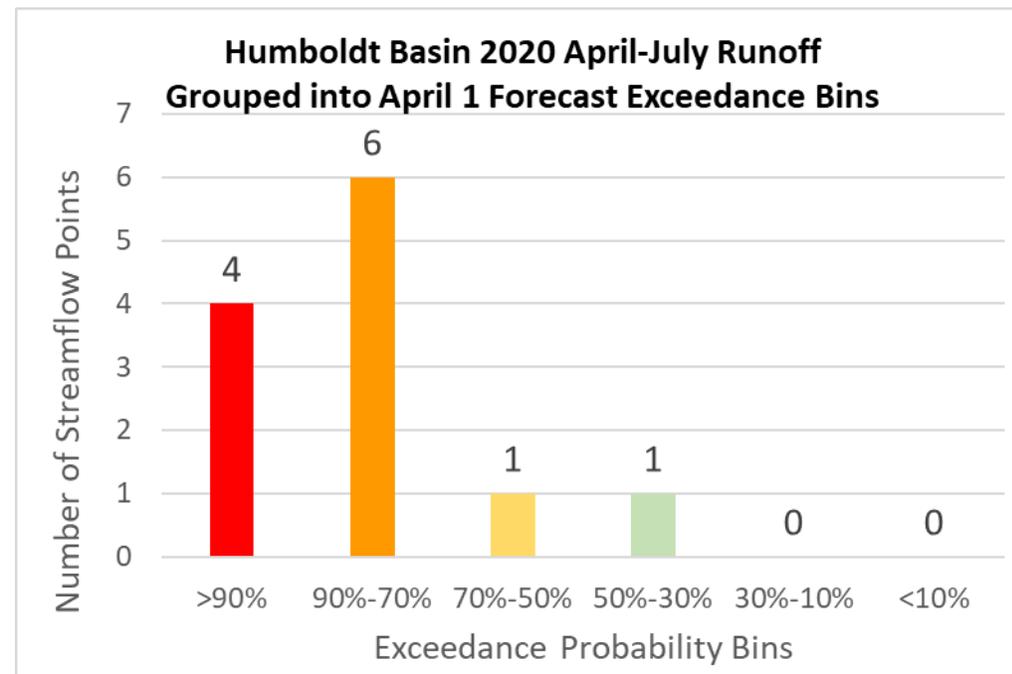
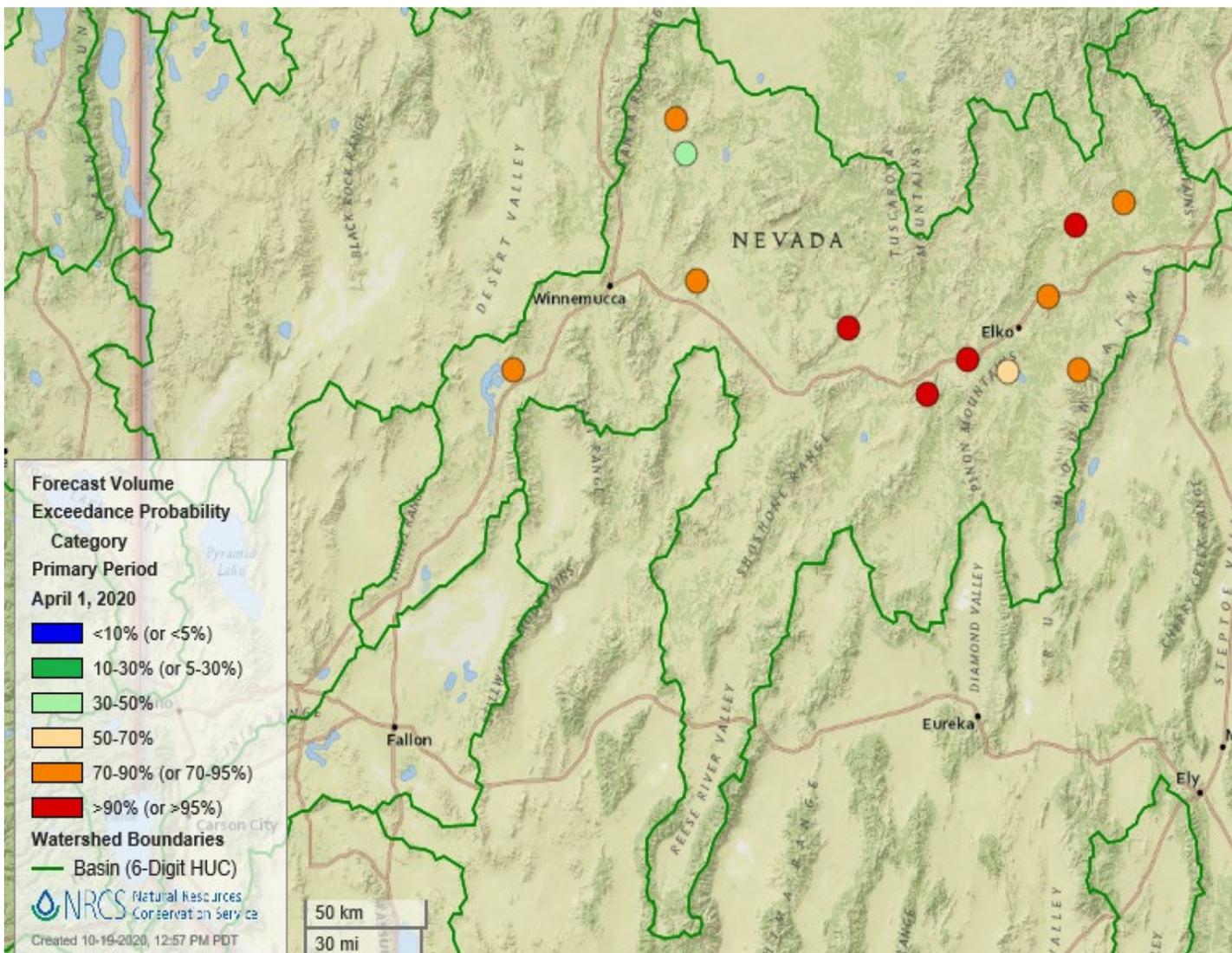
Watershed Boundaries
 — State Watersheds

NRCs Natural Resources Conservation Service
 Created 10-02-2020, 01:51 PM PDT

Snow Water Equivalent in Central Lahontan

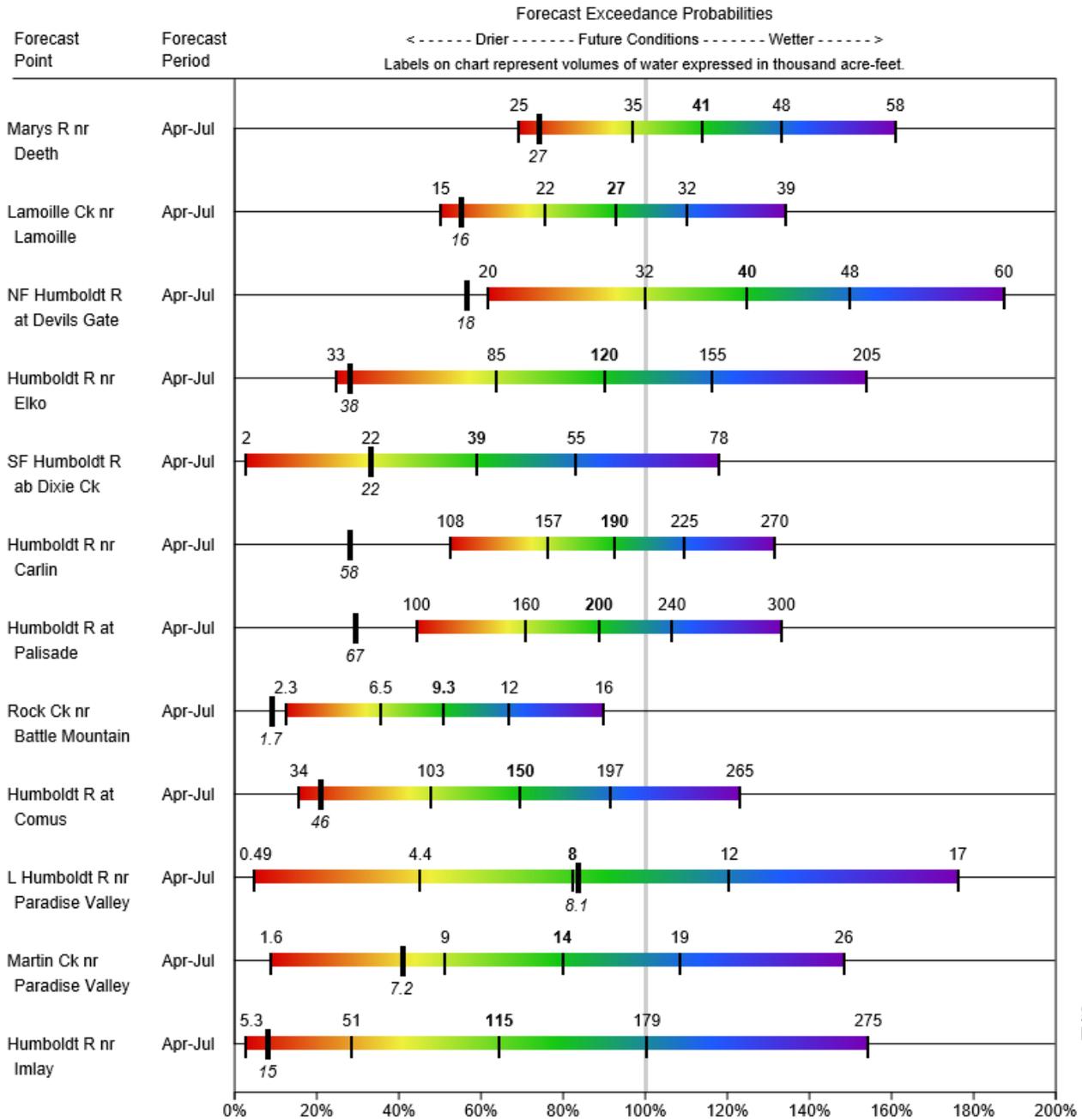


Humboldt Basin

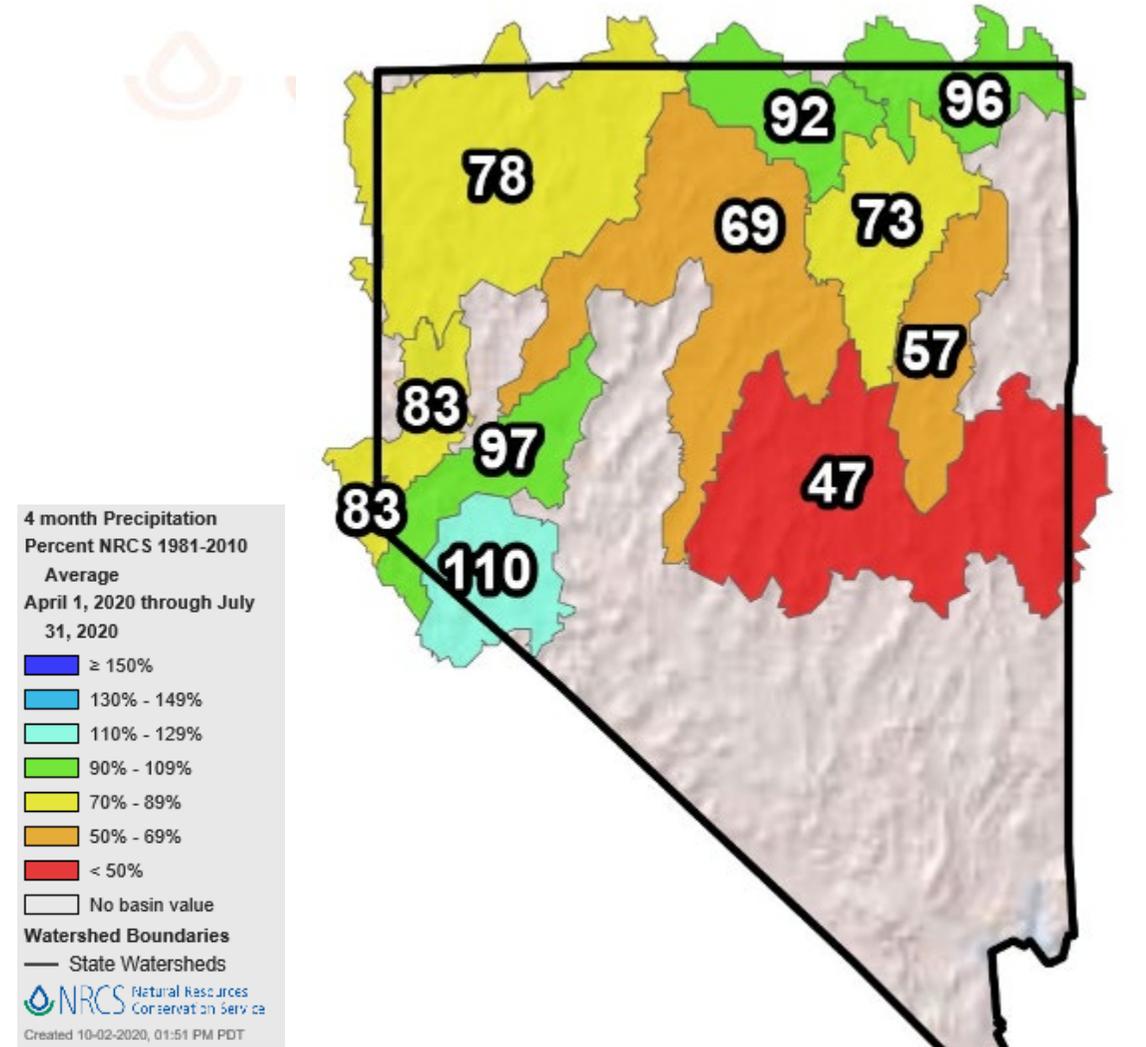


Observed streamflow generally
Well less than 50% exceedance forecasts

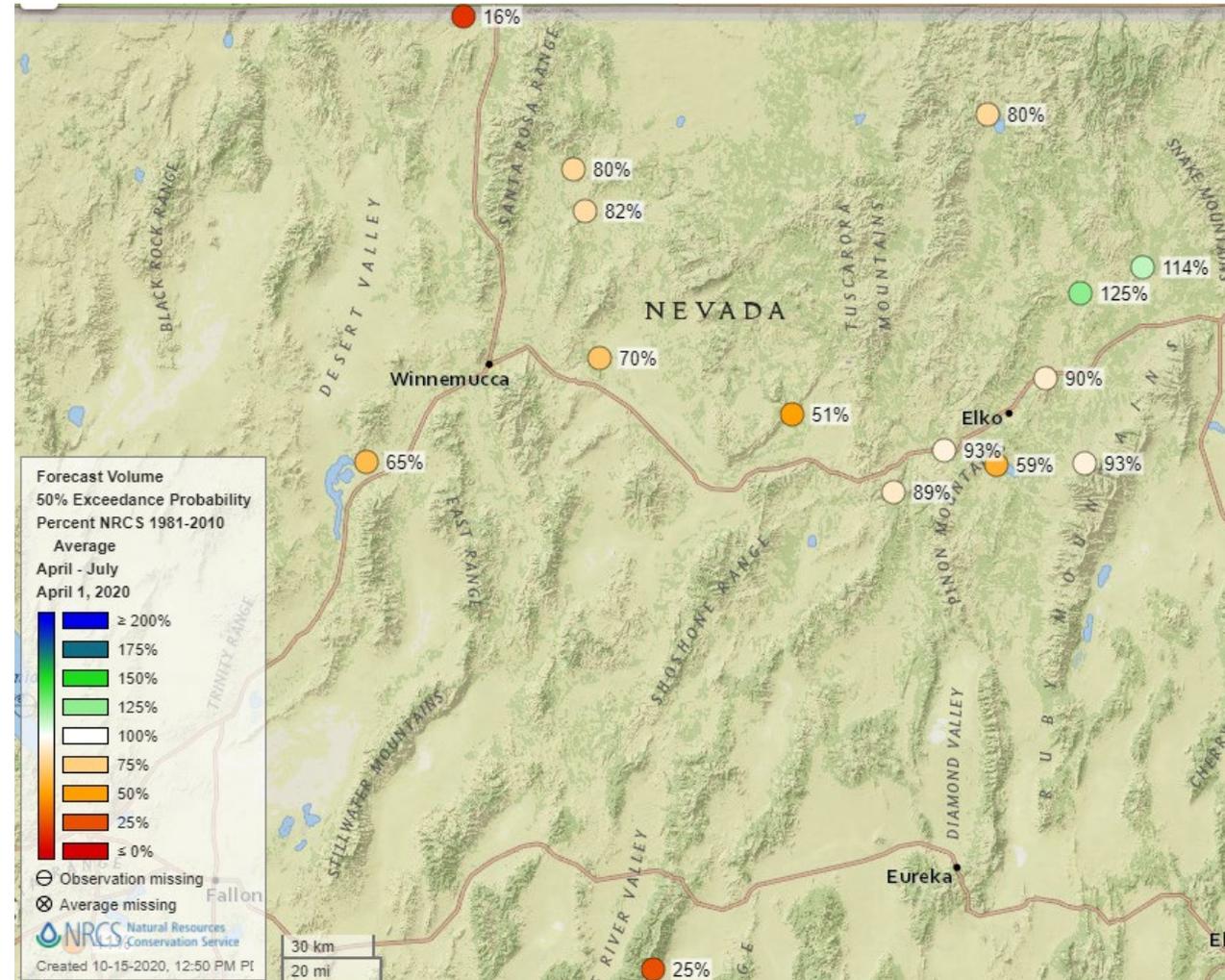
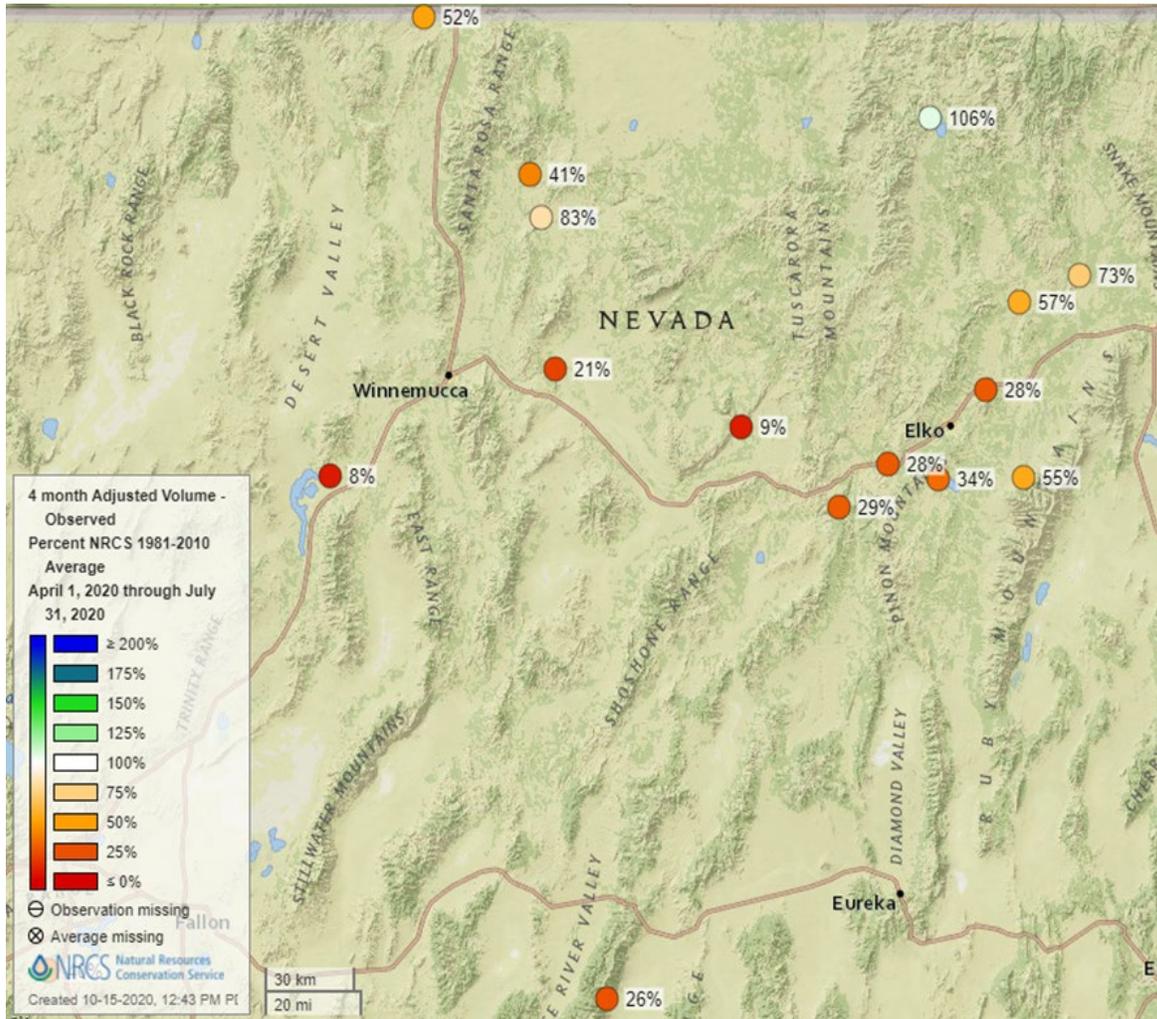
Humboldt River Summary
Water Supply Forecasts
 April 1, 2020



April – July
Precipitation as % of Average



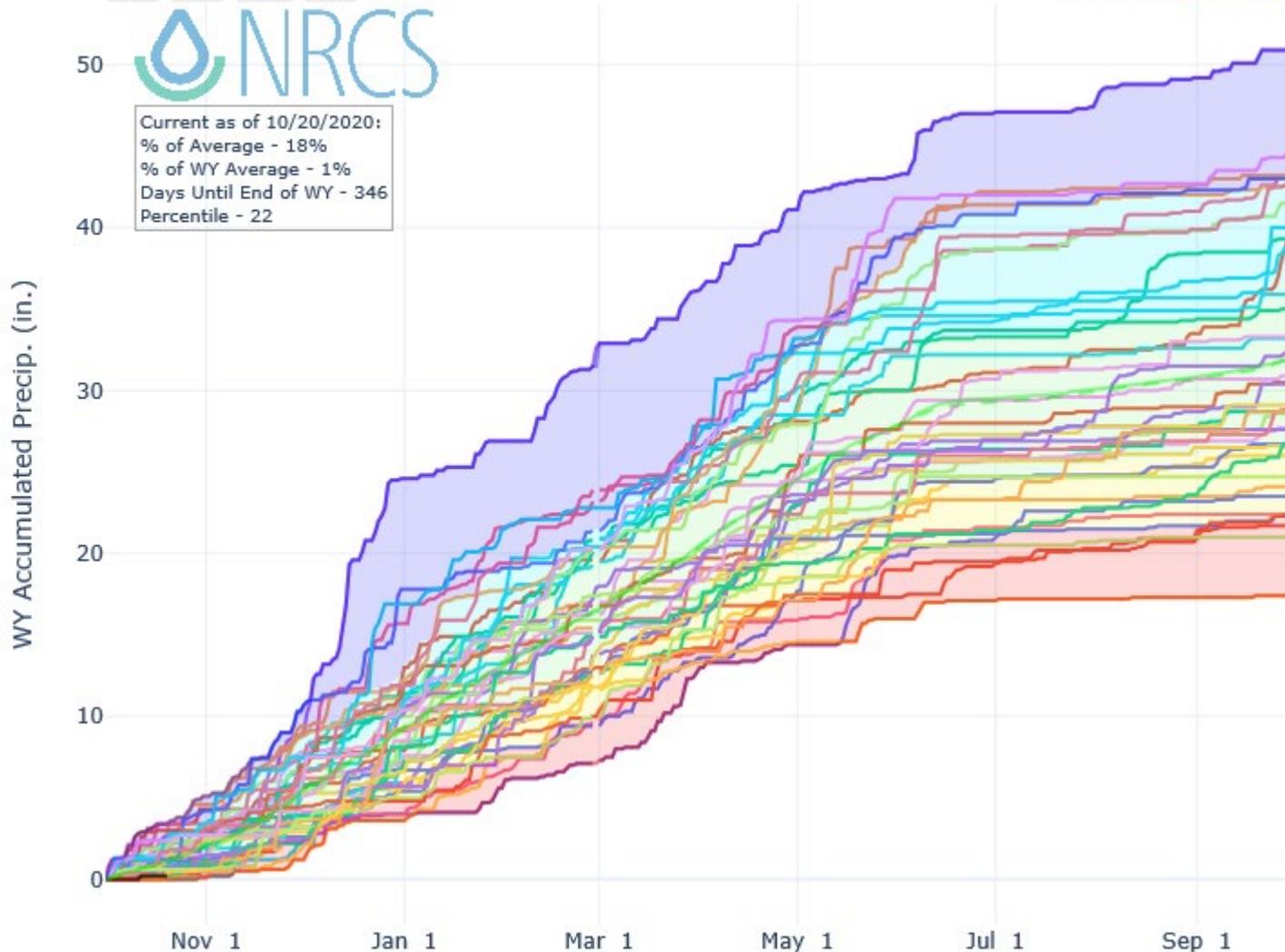
Summary of observed flow percent of average and April 1 forecast percent of average



PRECIPITATION AT GREEN MOUNTAIN

Jan Apr July WY

Link to data: [CSV](#) / [JSON](#)

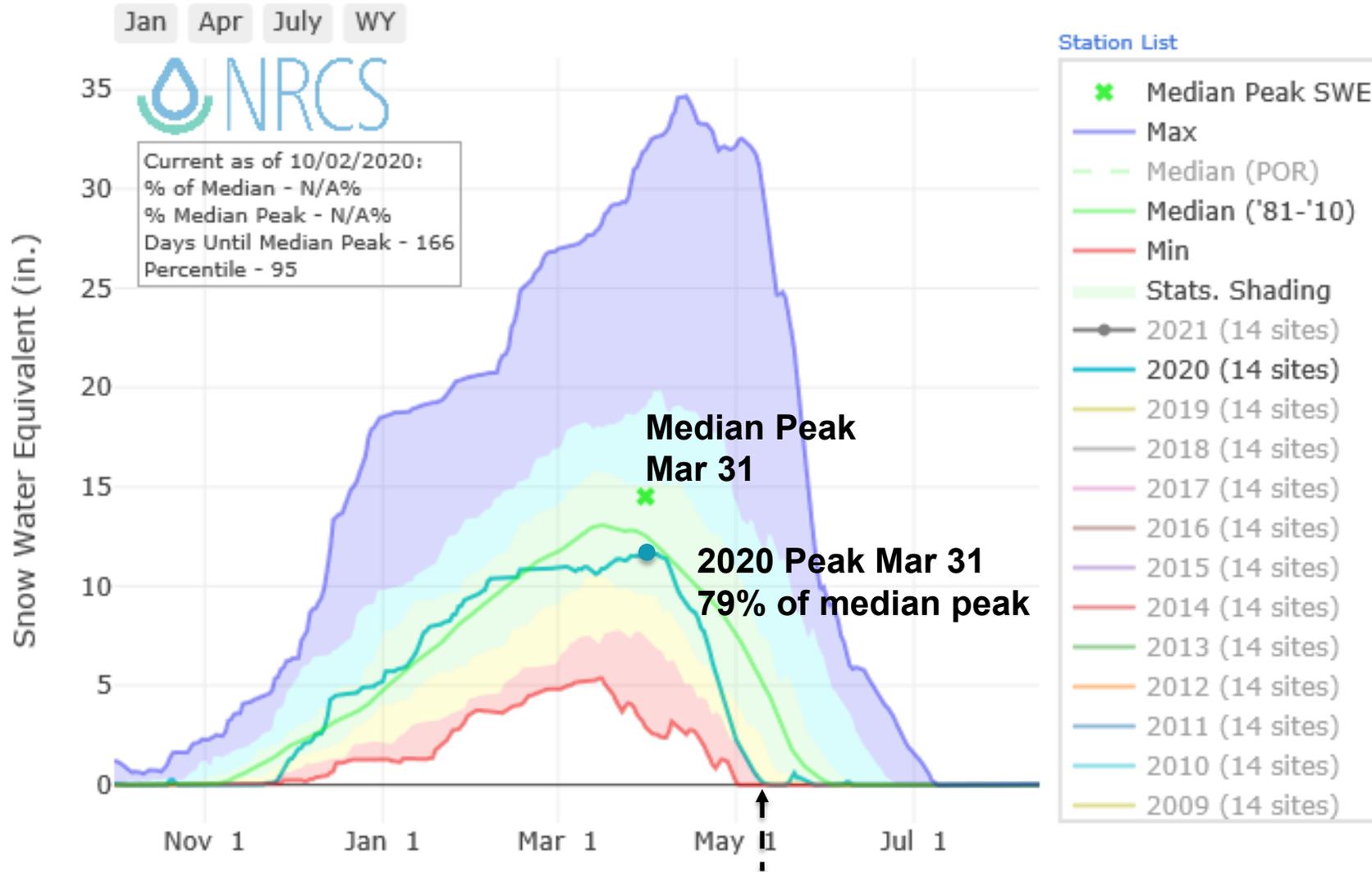


Record Low Water Year Precipitation in Ruby Mtns

**Example: Green Mtn was
+3.5 inches drier than
previous minimum years**

2018 = 21.0", 1992 = 21.7", 1981 = 22.3"
2020 = 17.5"

Snow Water Equivalent in Humboldt

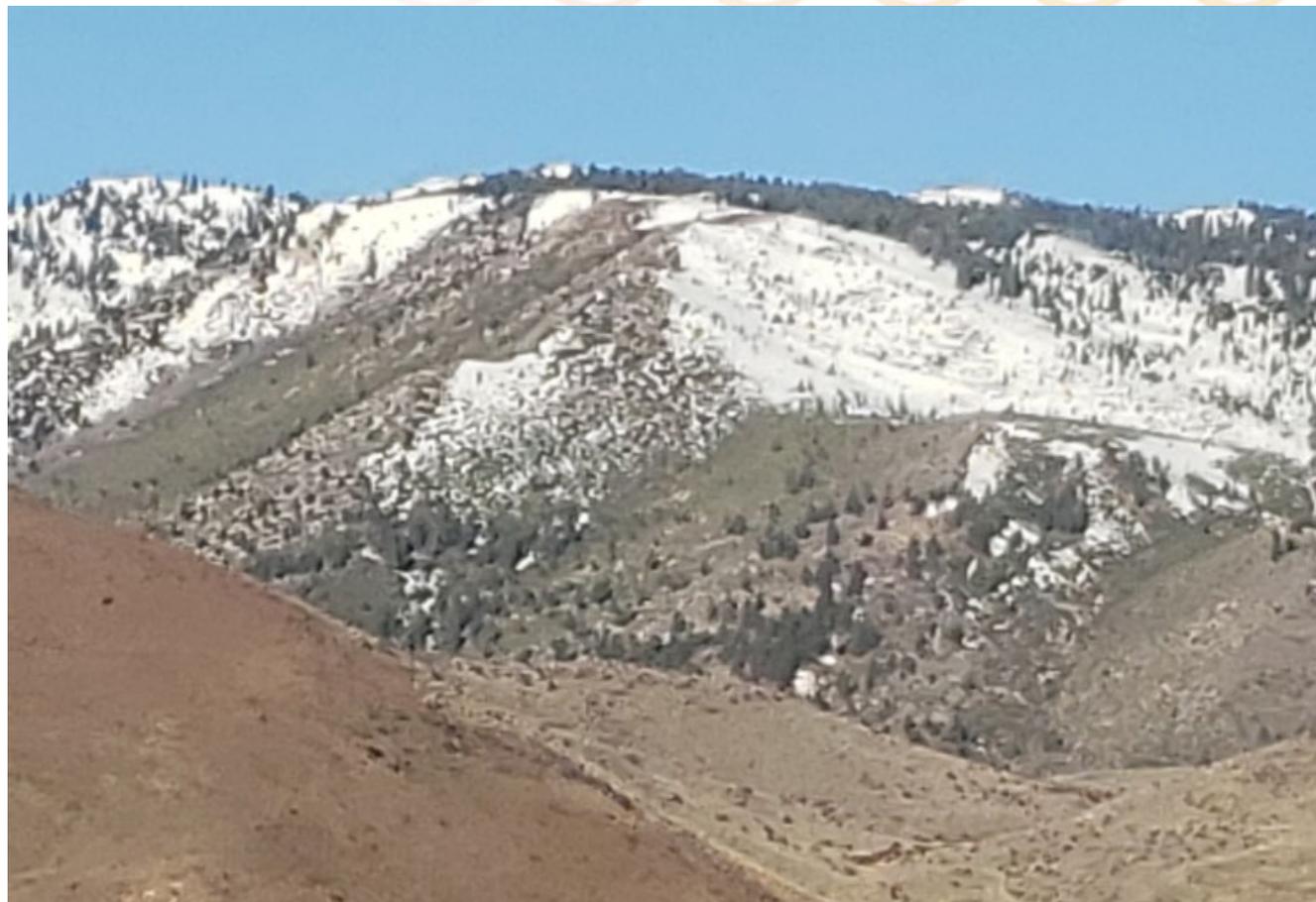


**Rapid Melt
Early Melt-out**

Most of Humboldt basin snow came by February 1.

Very little accumulation March - April.

Southern aspects (not represented by SNOTEL network) were no doubt snow-free by April-July runoff period.



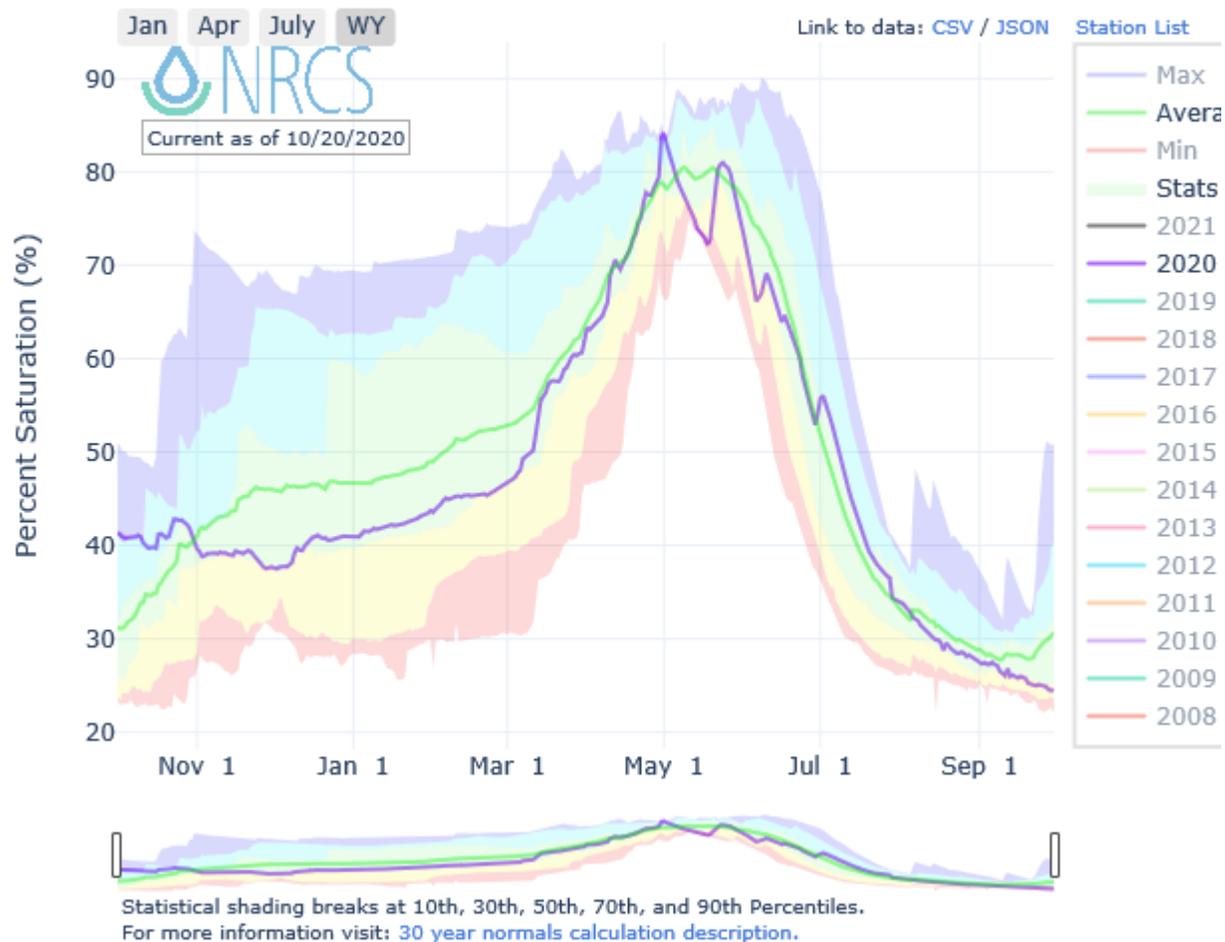
Example of Southern Aspect Burn-off



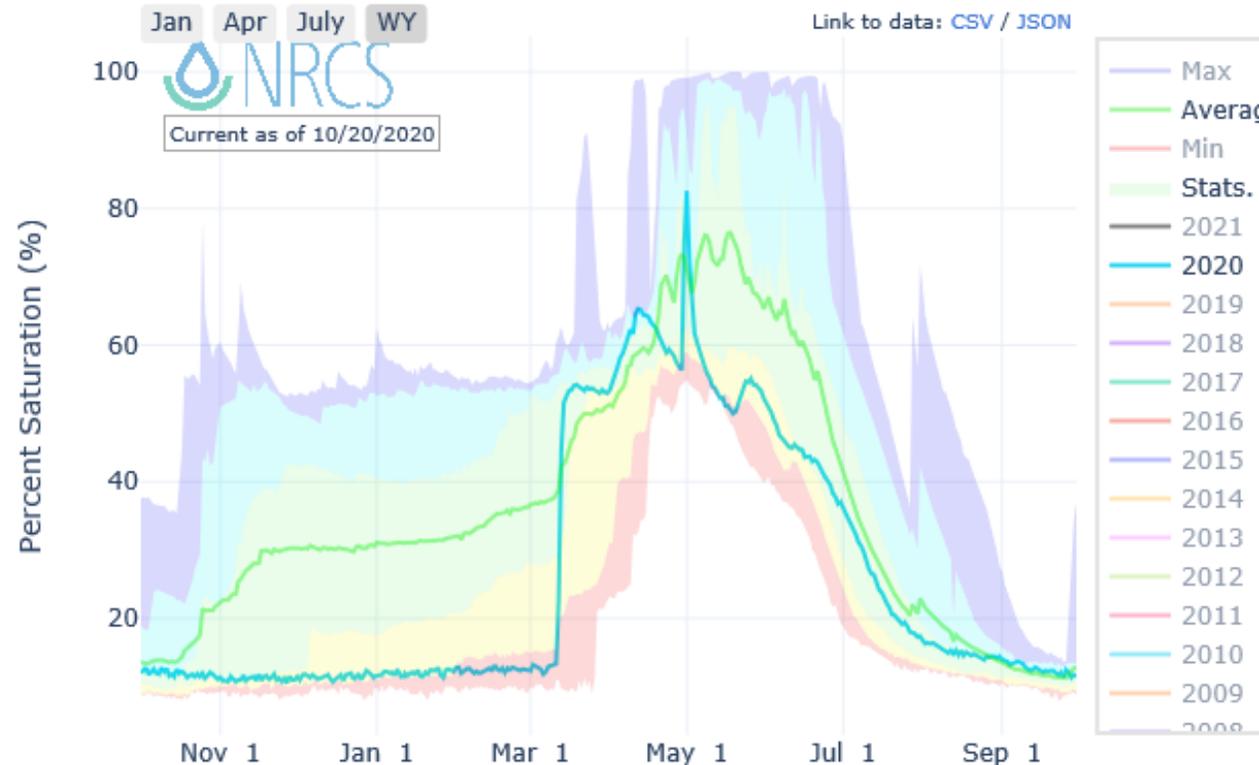
Soil Moisture Deficits



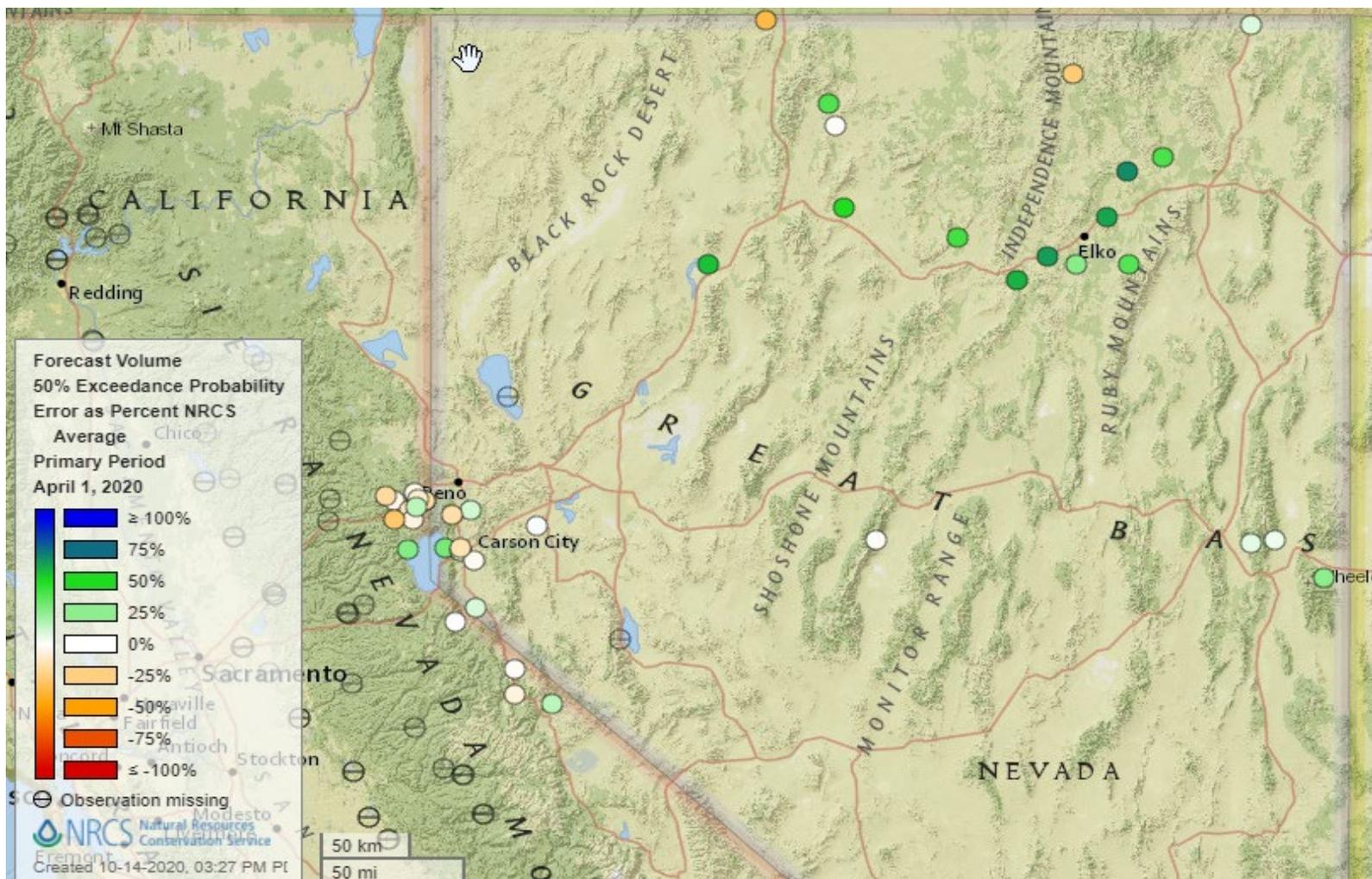
DEPTH AVERAGED SOIL SATURATION IN
UPPER HUMBOLDT



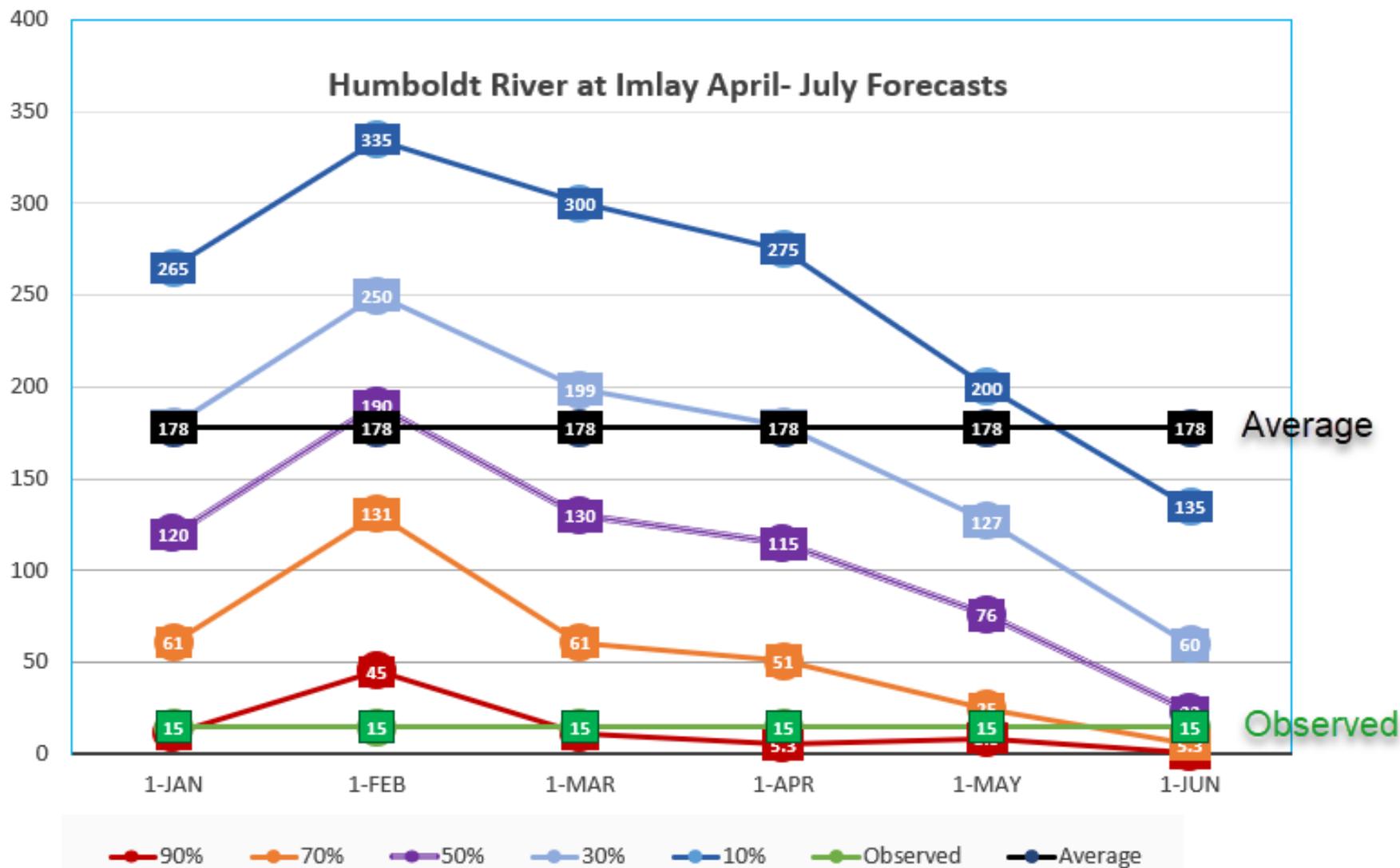
DEPTH AVERAGED SOIL SATURATION AT
LAMOILLE #3



April 1 forecasts compared to observed streamflow as a percent of average



Humboldt River at Imlay



Forecast redevelopment for 2020-2021



2020-2021 we will be updating all forecasts in the West

Fall of 2020 East Side of Nevada redevelopment

Humboldt River (all forecasts)

Forecasts in Eastern Nevada

Forecasts in Northwest Nevada.

2021 work will include updates of all forecasts in the Sierra Nevada (NV/CA)



Summary

Sierra

- Corona comeback snow (mid-March to mid-April) saved Sierra winter by boosting peak and delaying melt 2 extra weeks.
- < 50% normal April – July runoff could have been much worse.
- April-July 2020 runoff was near to slightly above the 50% exceedance forecasts

Humboldt

- Flattened snowpack curve leading to 3-week earlier melt out
- Flattened precipitation curve leading to record dry water year
- What was above normal snowpack on Feb 1 stalled, and turned into disappointing runoff with <40% of average April-July streamflow.
- April-July 2020 runoff far less than 50% exceedance forecasts