

CBRFC Forecast Areas

Colorado Basin Water Supply Briefing

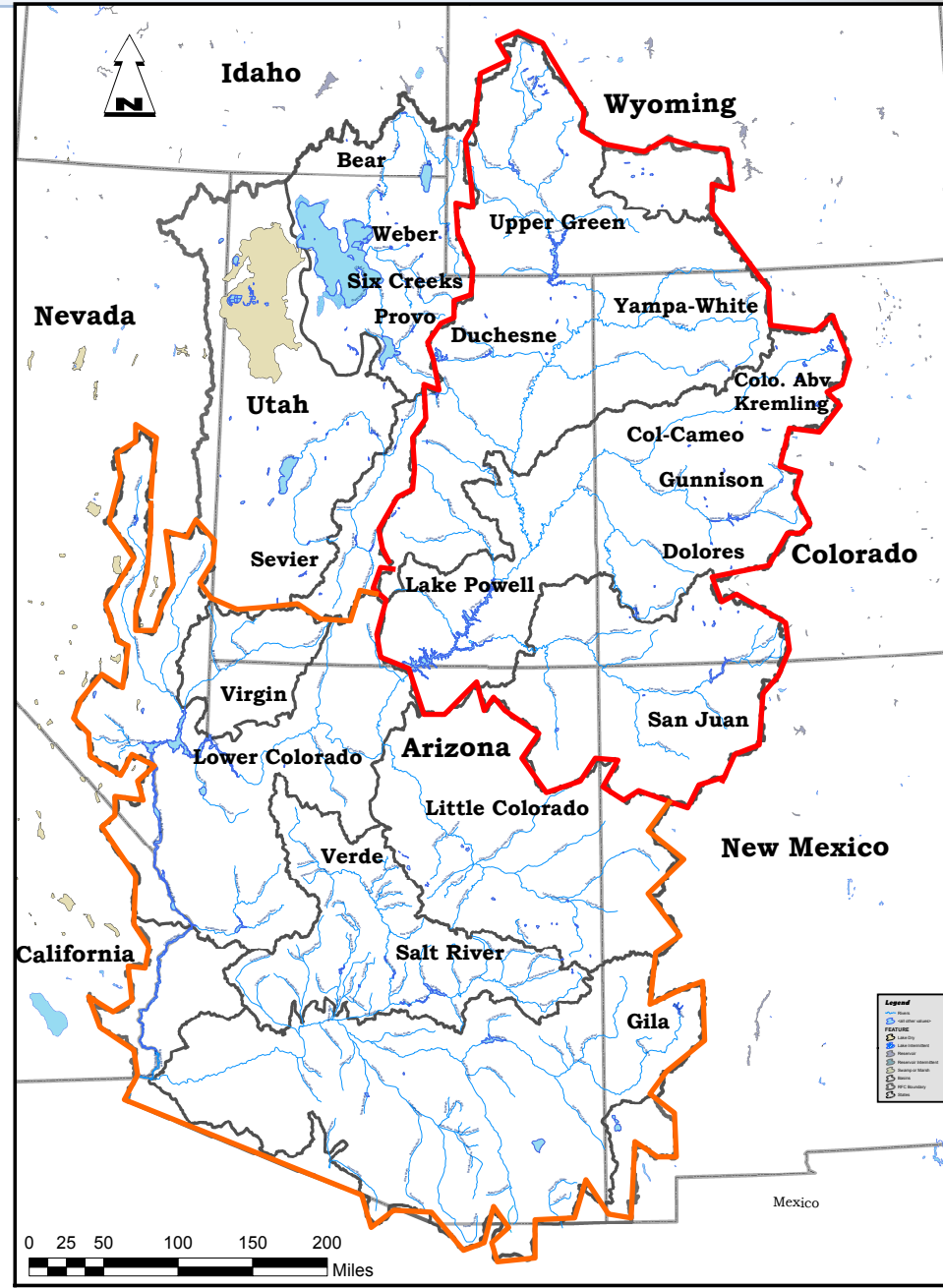
February 7 2019

Greg Smith - Sr. Hydrologist
Colorado Basin River Forecast Center

Phone: 1-877-929-0660

Passcode: 1706374

**Please mute your phone
until the question period**



Today's Presentation

Weather review

Quite a different start from than last year

Current Snowpack

Soil moisture conditions

2019 Water supply forecasts

Select forecast site review

Early season forecast error

Upcoming weather

Contacts & Questions

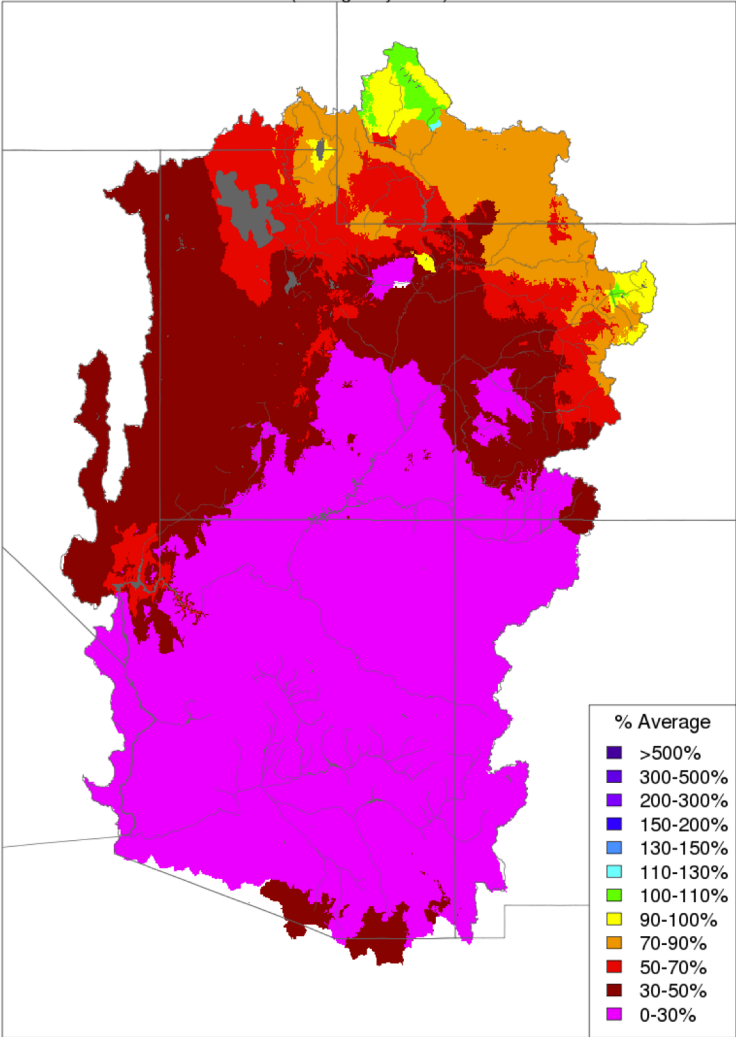
Phone: 1-877-929-0660 Passcode: 1706374

*** Please mute your phone until the question period ***

A much different start compared to last year

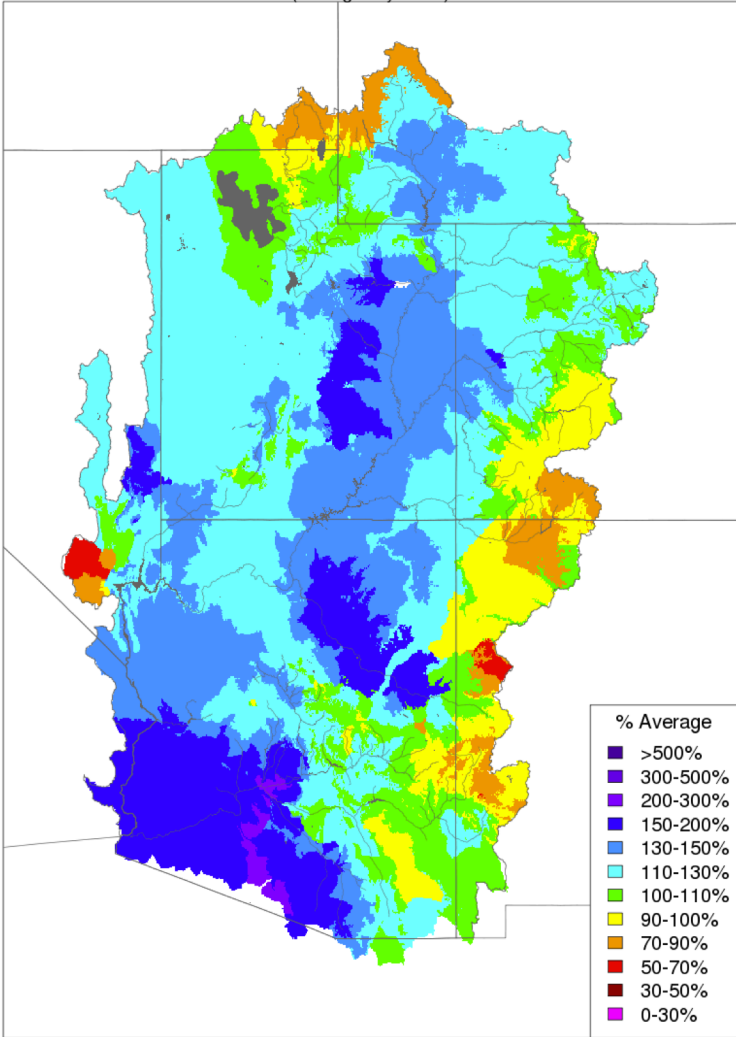
Water Year (October – January) Precipitation

Water Year Precipitation, October 2017 - January 2018
(Averaged by Basin)



Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

Water Year Precipitation, October 2018 - January 2019
(Averaged by Basin)



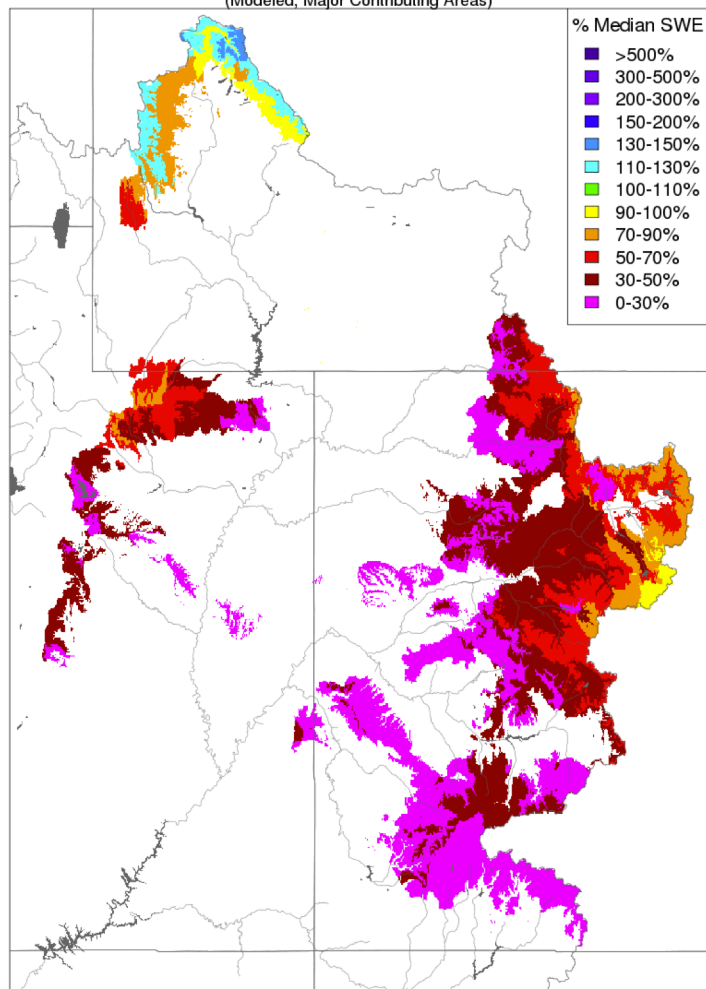
Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

A much different start compared to last year

February 6th Snow Conditions (CBRFC hydrologic model)

Snow Conditions - February 06 2018

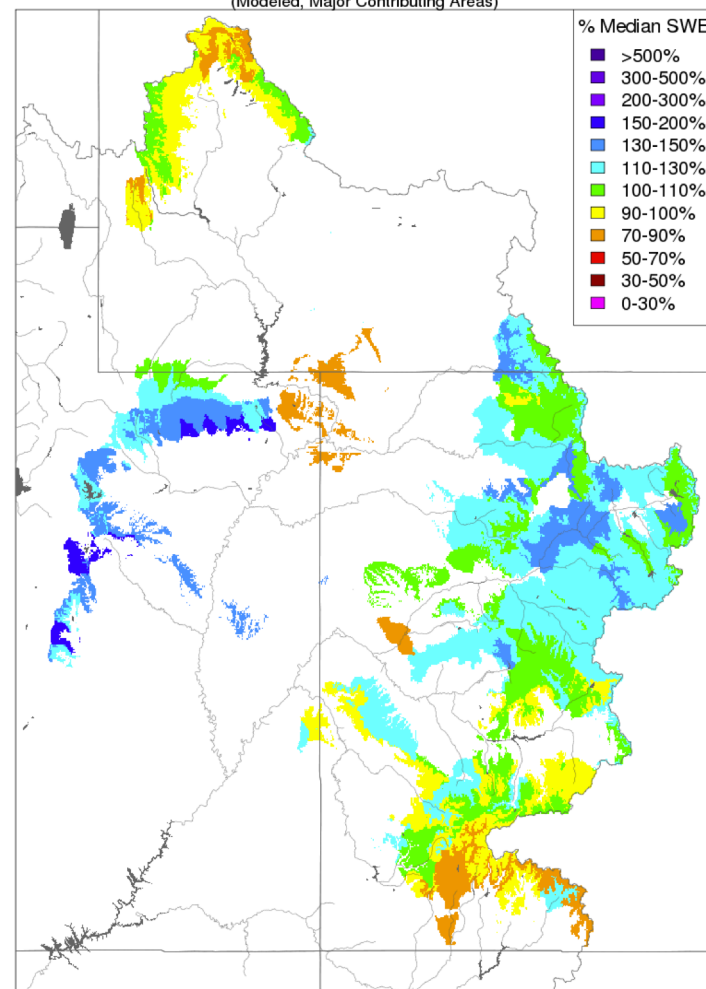
(Modeled, Major Contributing Areas)



Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

Snow Conditions - February 06 2019

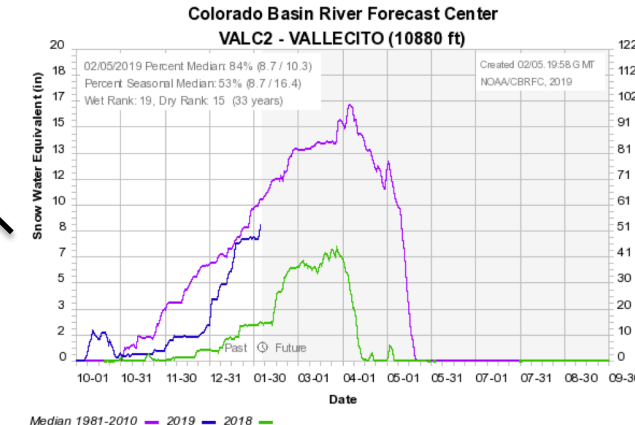
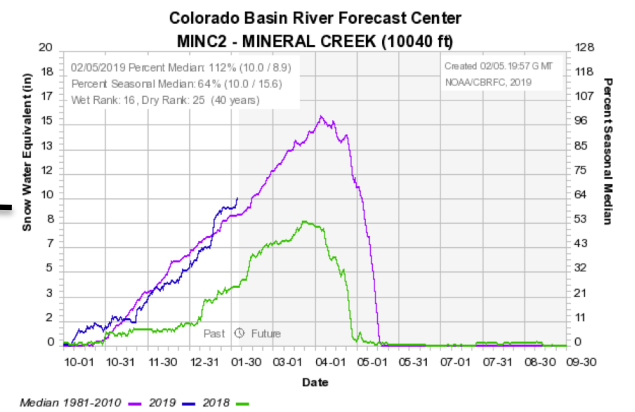
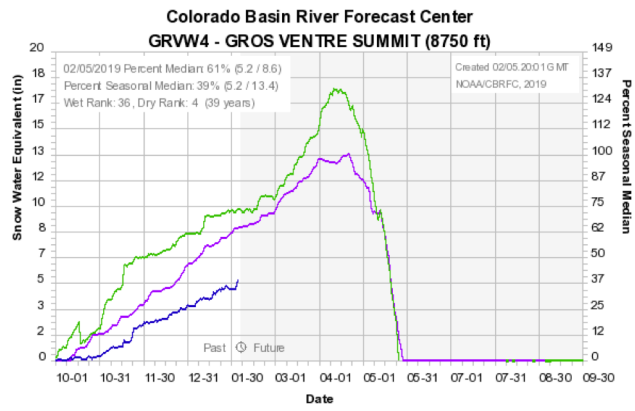
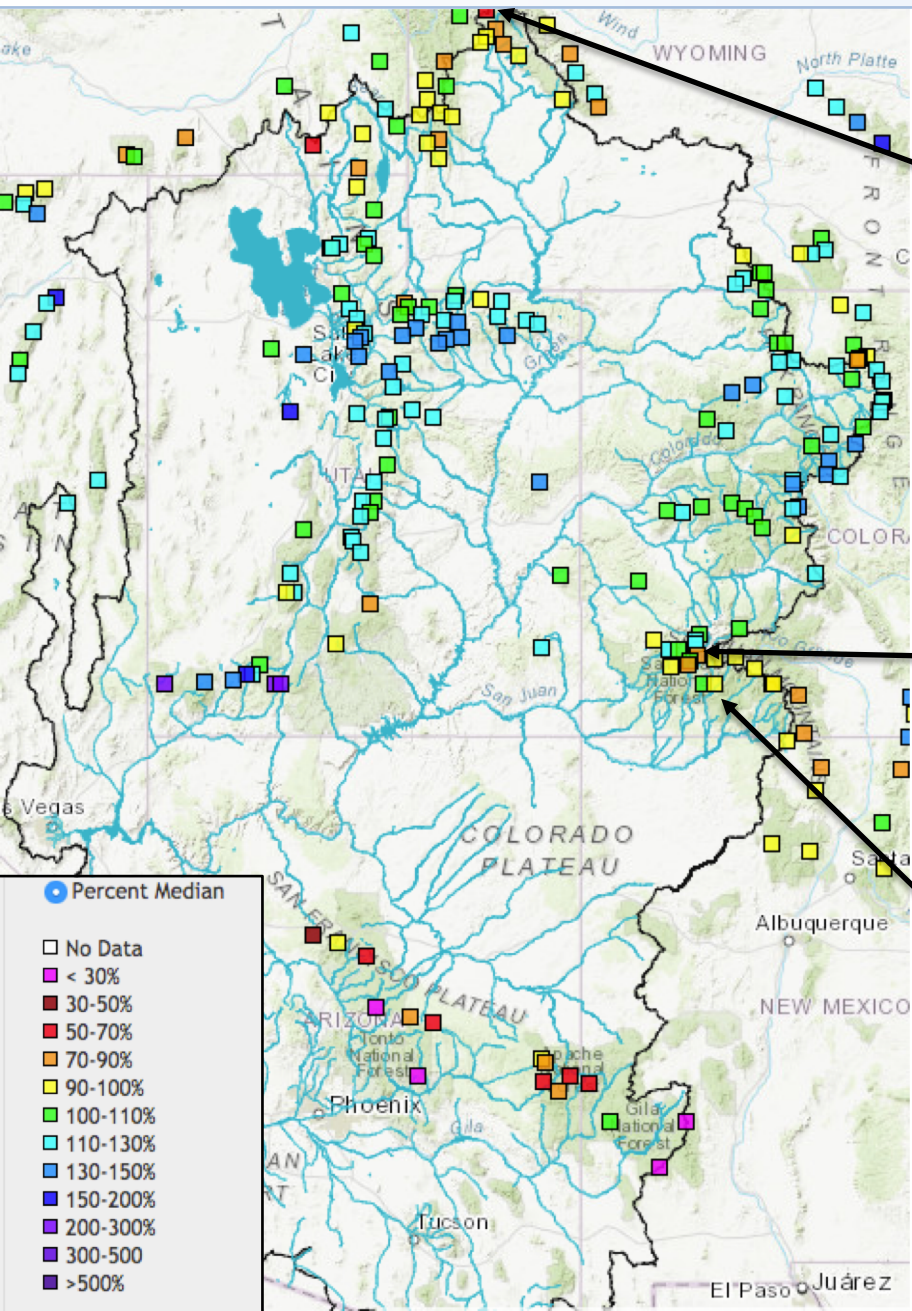
(Modeled, Major Contributing Areas)



Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

Current Snow Conditions –SNOTEL

Most areas better than last year except upper Green. Some areas have exceeded last years peak



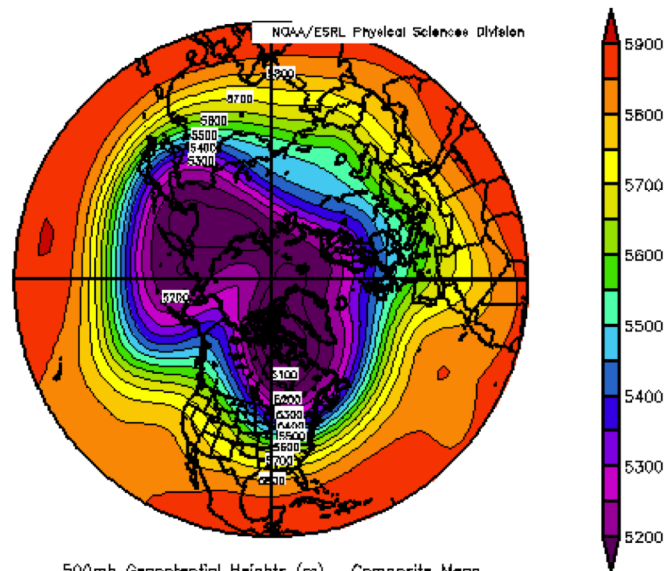
2018: Strong ridge / blocking pattern
Infrequent storms – extended dry periods

2019: Progressive pattern
Warmer Pacific / stronger southern jet stream

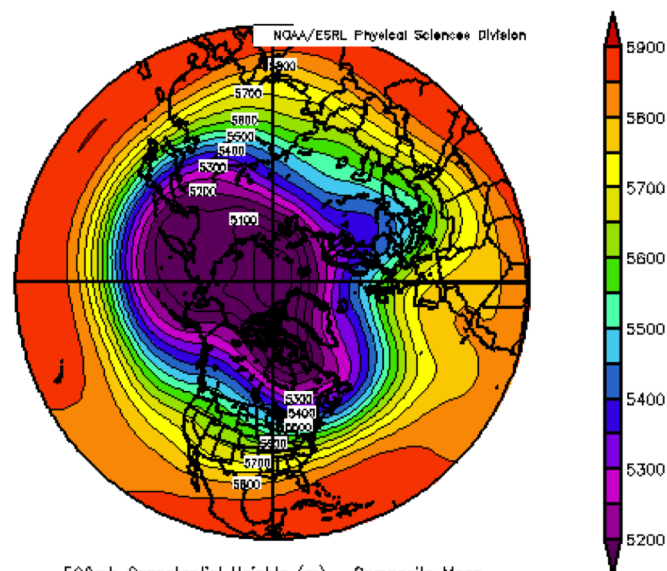
Mean atmospheric pattern

Dec 1 – Jan 15

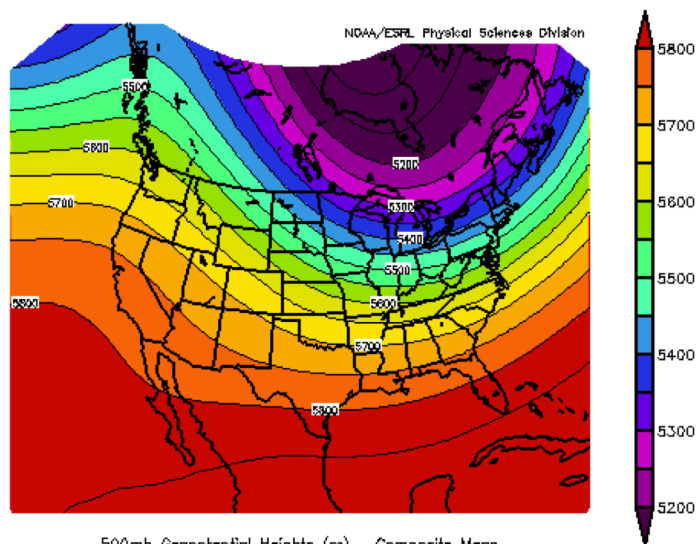
2018 vs 2019



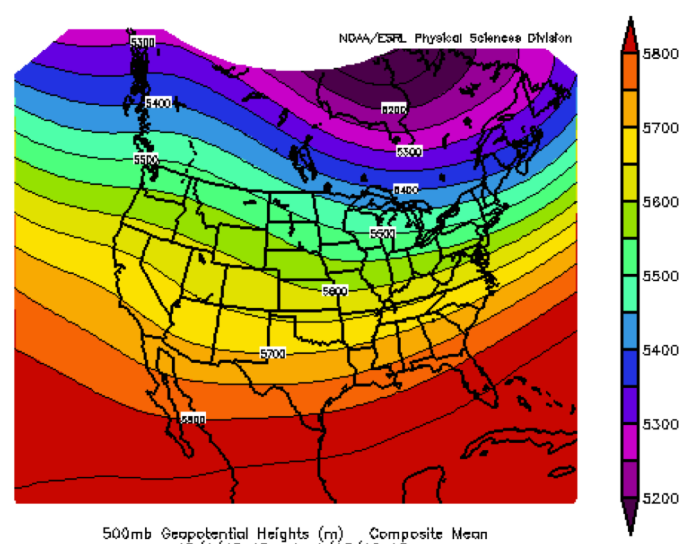
500mb Geopotential Heights (m) Composite Mean
12/1/17 12z to 1/15/18 12z
NCEP/NCAR Reanalysis



500mb Geopotential Heights (m) Composite Mean
12/1/18 12z to 1/15/19 12z
NCEP/NCAR Reanalysis



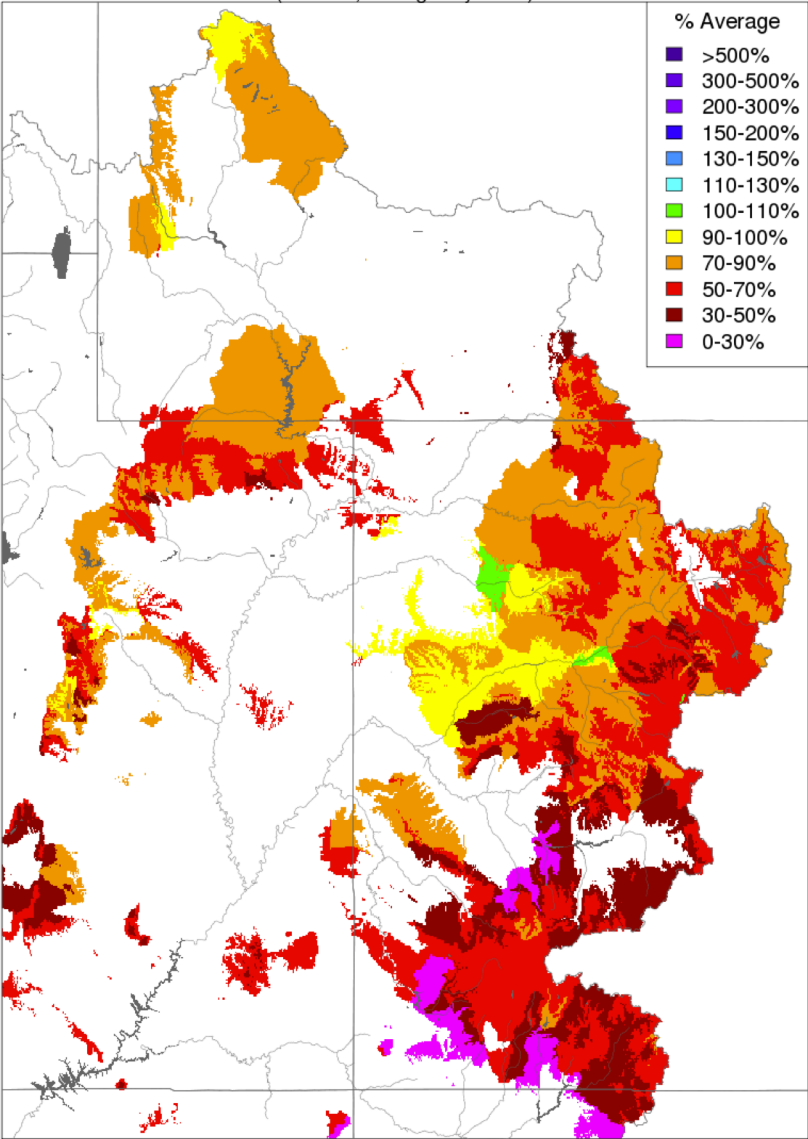
500mb Geopotential Heights (m) Composite Mean
12/1/17 12z to 1/15/18 12z
NCEP/NCAR Reanalysis



500mb Geopotential Heights (m) Composite Mean
12/1/18 12z to 1/15/19 12z
NCEP/NCAR Reanalysis

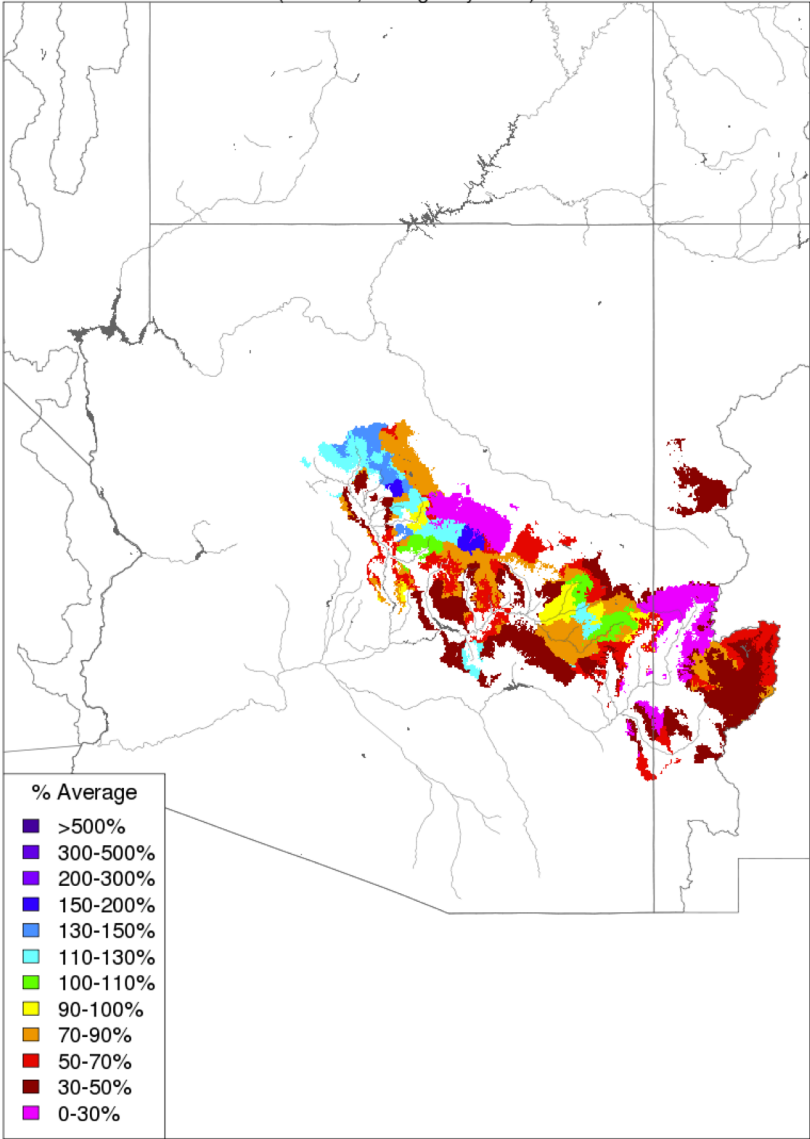
Dry soils entering the winter – May act to reduce some runoff volumes

Soil Moisture - Fall - 2018 (November 15)
(Modeled, Averaged by Basin)



Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

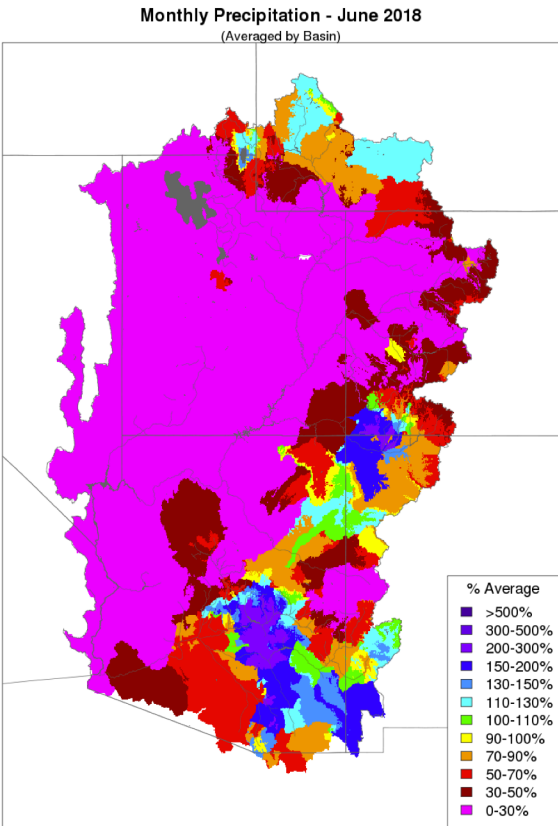
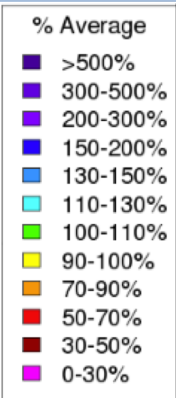
Soil Moisture - February 06 2019
(Modeled, Averaged by Basin)



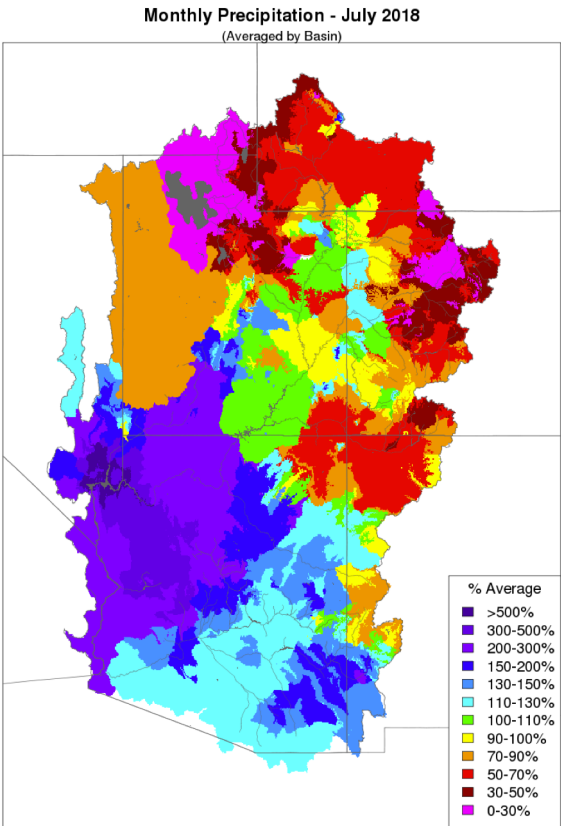
Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

Conditions contributing to dry soil moisture conditions

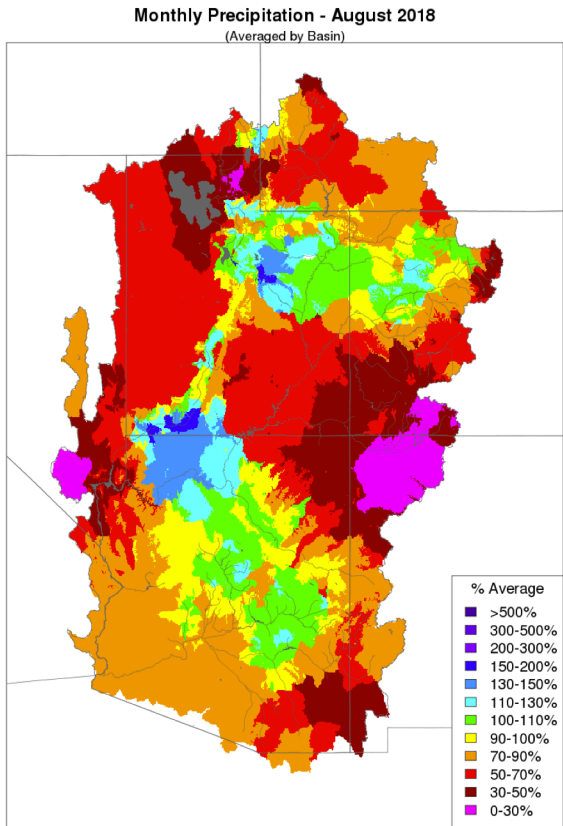
Very low runoff volumes in 2018, low flows throughout the summer
Dry summer over most runoff producing areas
Little monsoonal impact last summer



Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov



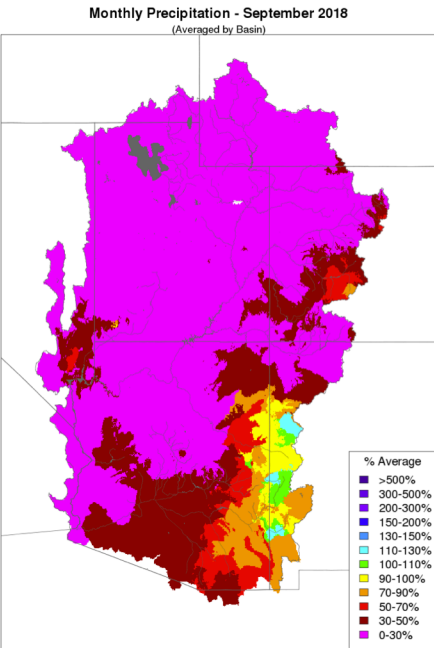
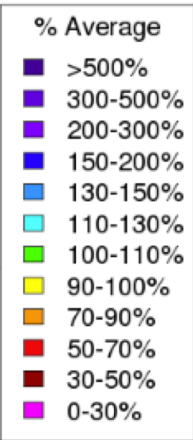
Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov



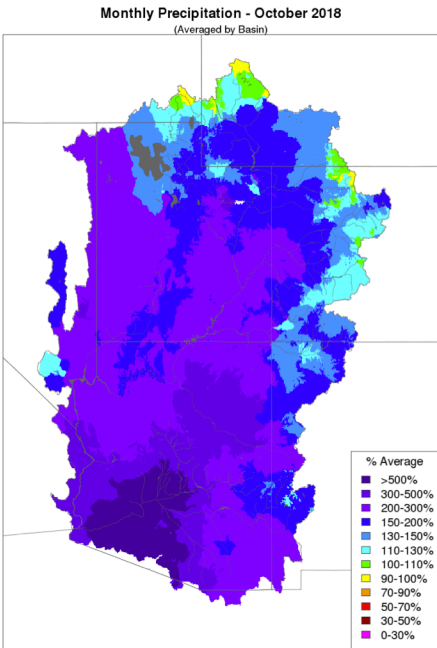
Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

Conditions contributing to dry soil moisture conditions

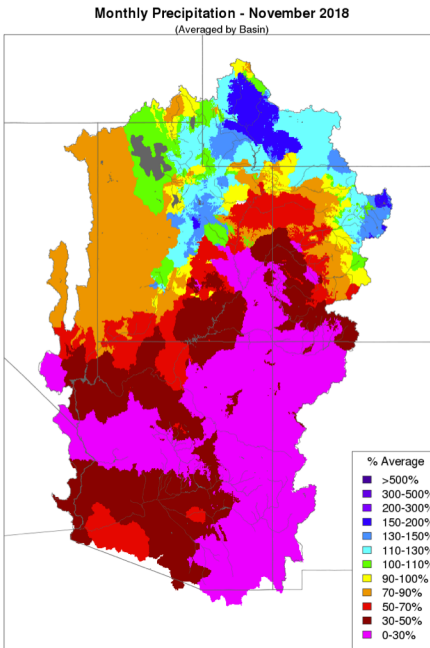
Very dry September (No monsoonal impact)
Some rebound in baseflow due to a wet October
Dry again most of November into December over most areas.



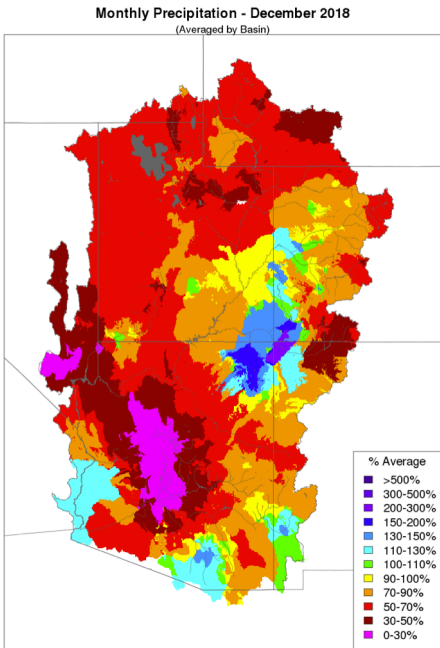
Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov



Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

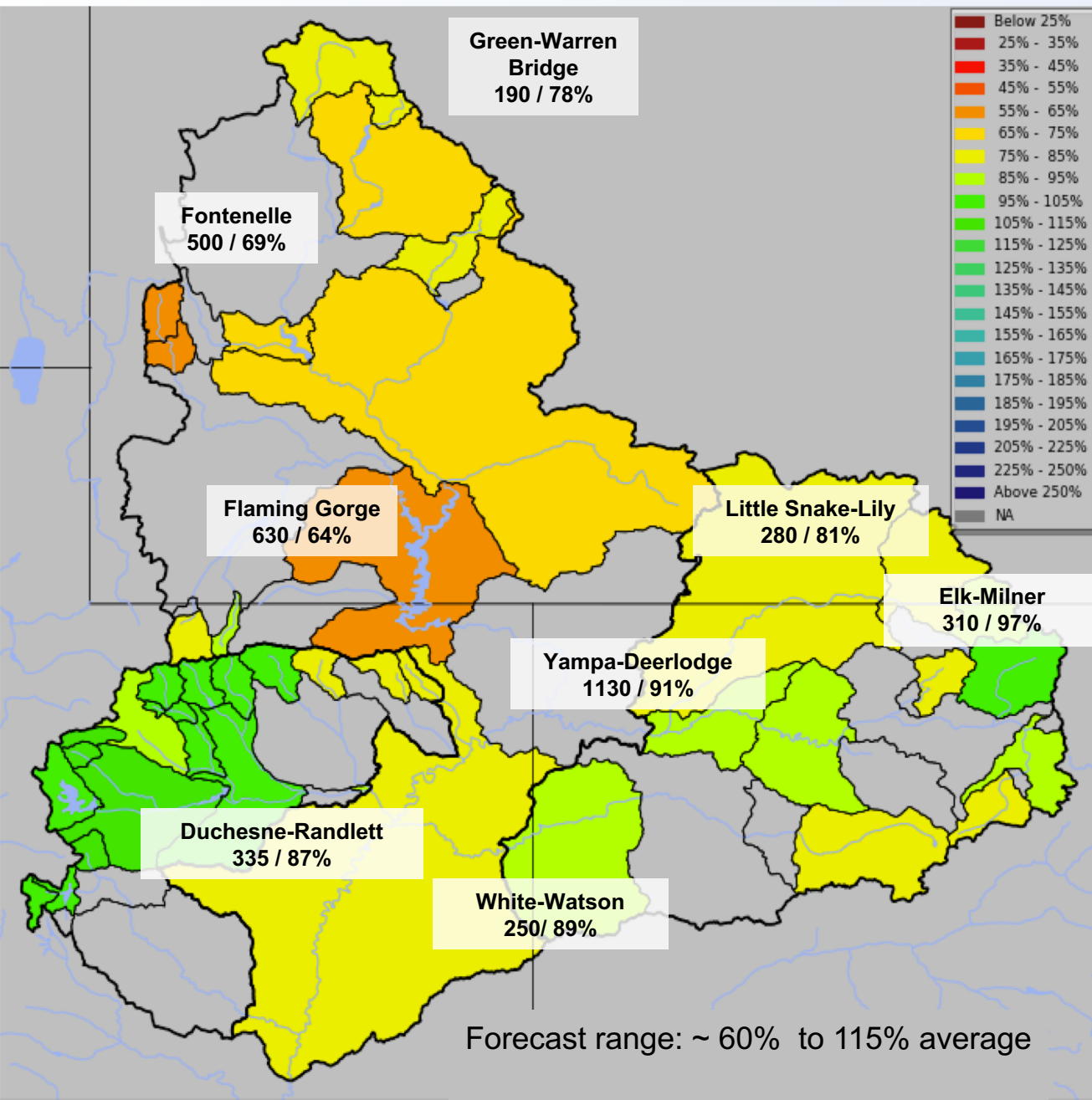


Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov



Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

Upper Colorado: Green-Yampa-White-Duchesne



Forecasts as of Feb 1 2019

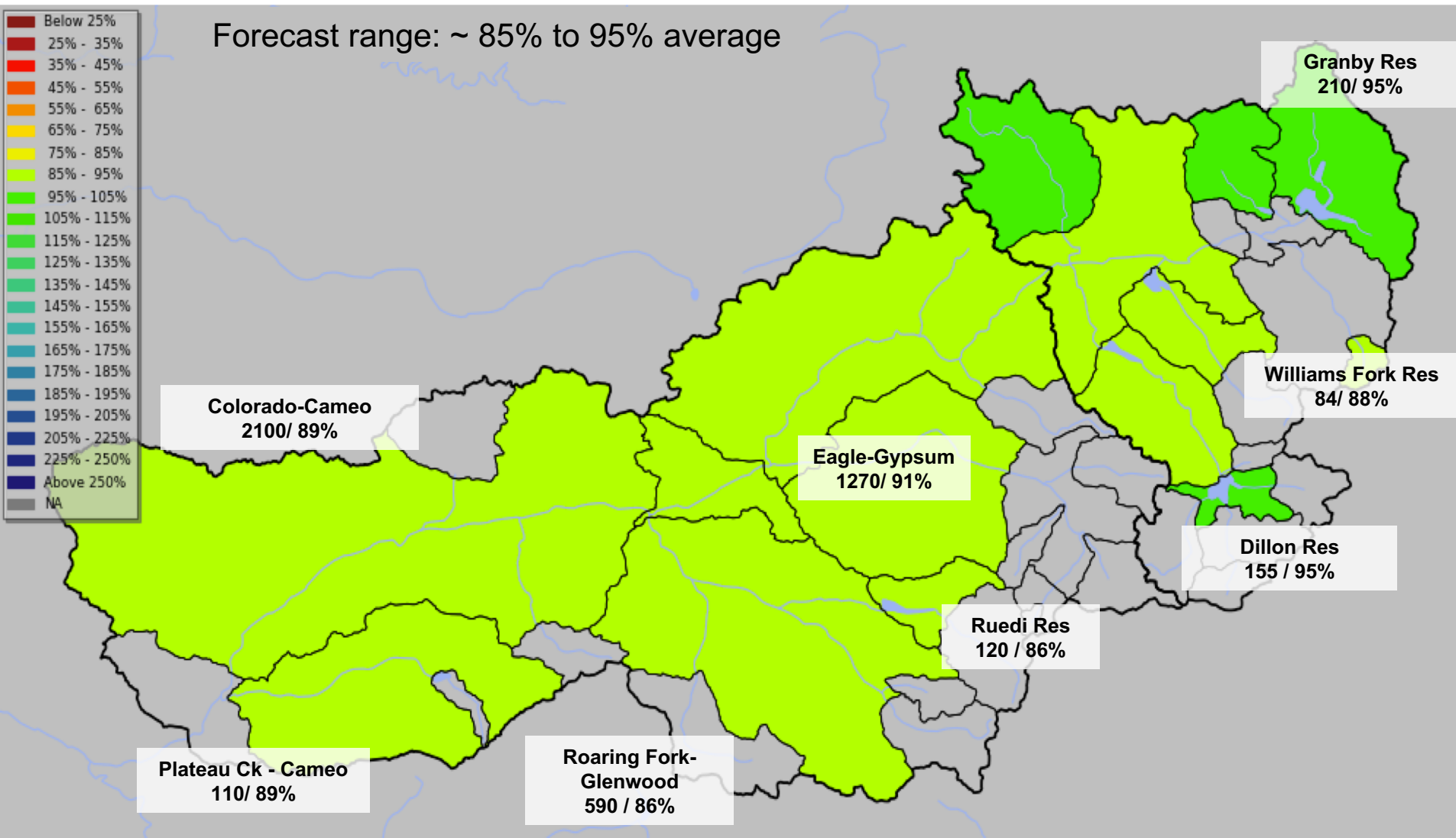
Volume 1000's acre feet /
% of 1981-2010 average

Duchesne Basin
Increased
15-35 percent of average
over forecasts issued in
January

Upper Colorado: Colorado River Mainstem

Forecasts as of Feb 1 2019

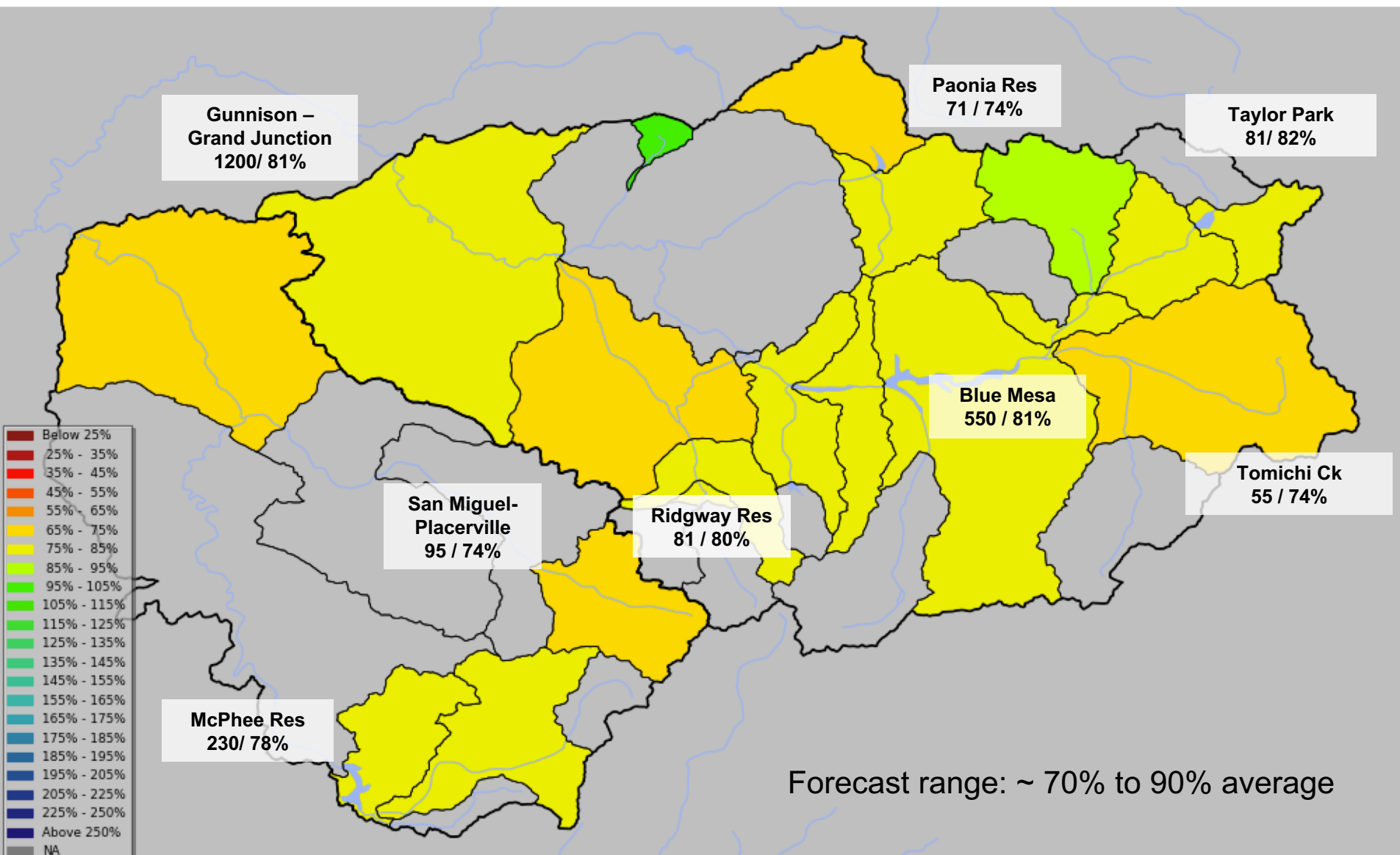
Volume in 1000's acre-feet / % of 1981-2010 average



Upper Colorado: Gunnison and Dolores Basins

Forecasts as of Feb 1 2019

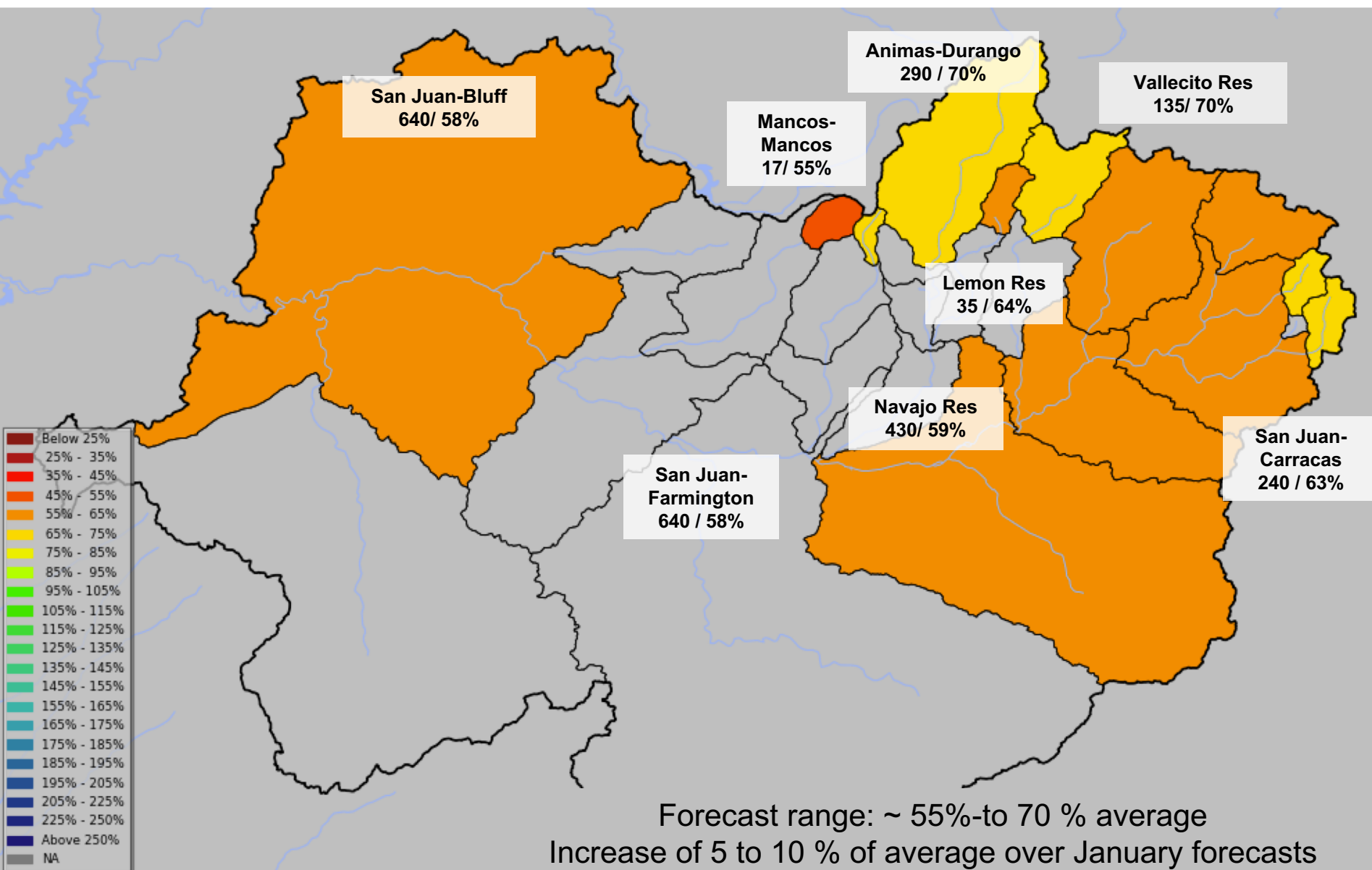
Volume in 1000's acre-feet / % of 1981-2010 average



Upper Colorado: San Juan Basin

Forecasts as of Feb 1 2019

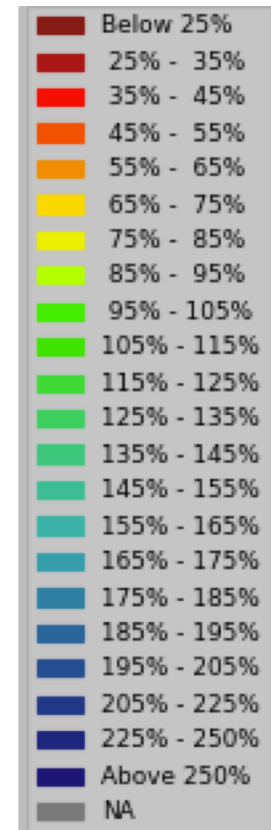
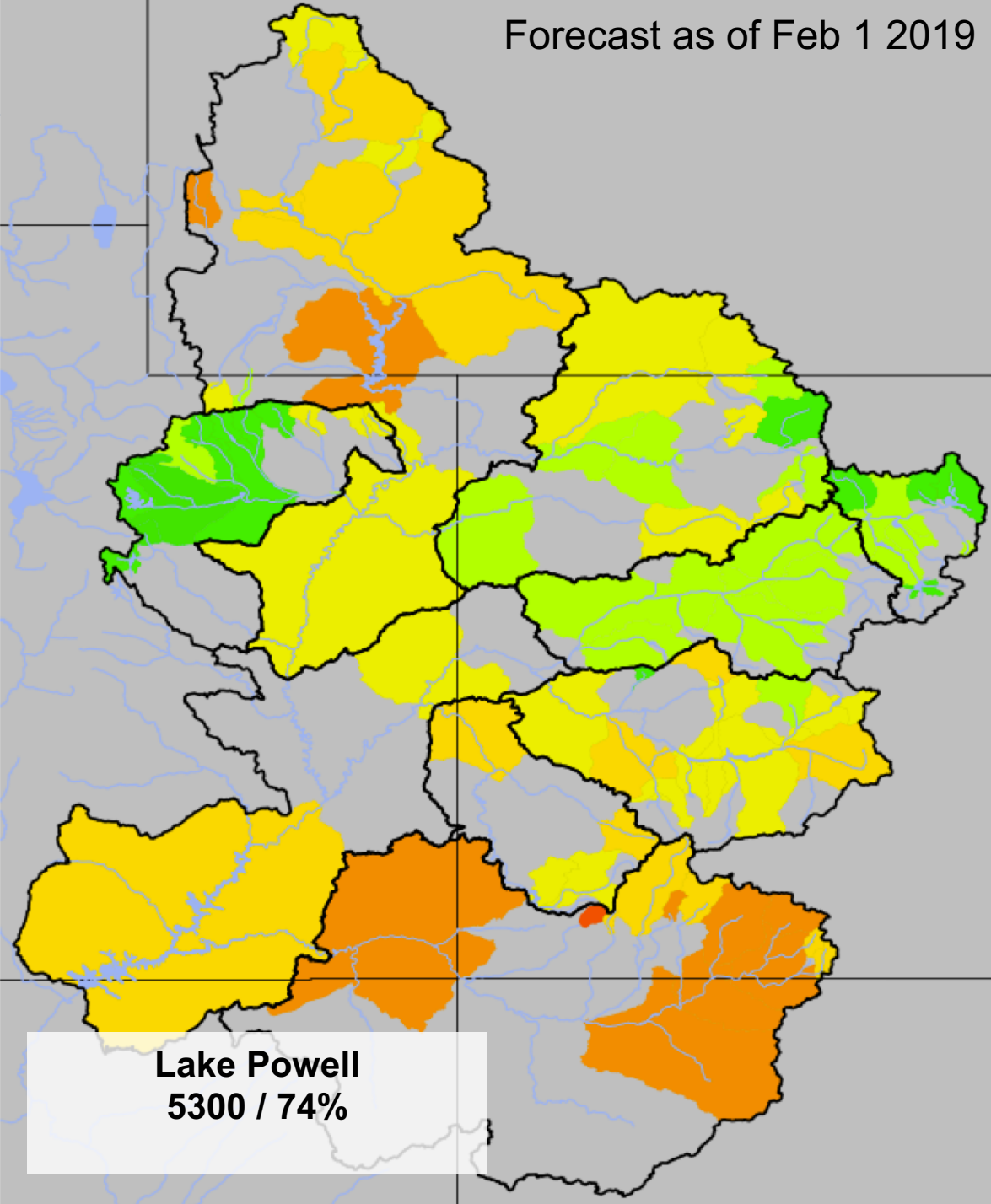
Volume in 1000's acre-feet / % of 1981-2010 average



Forecast as of Feb 1 2019

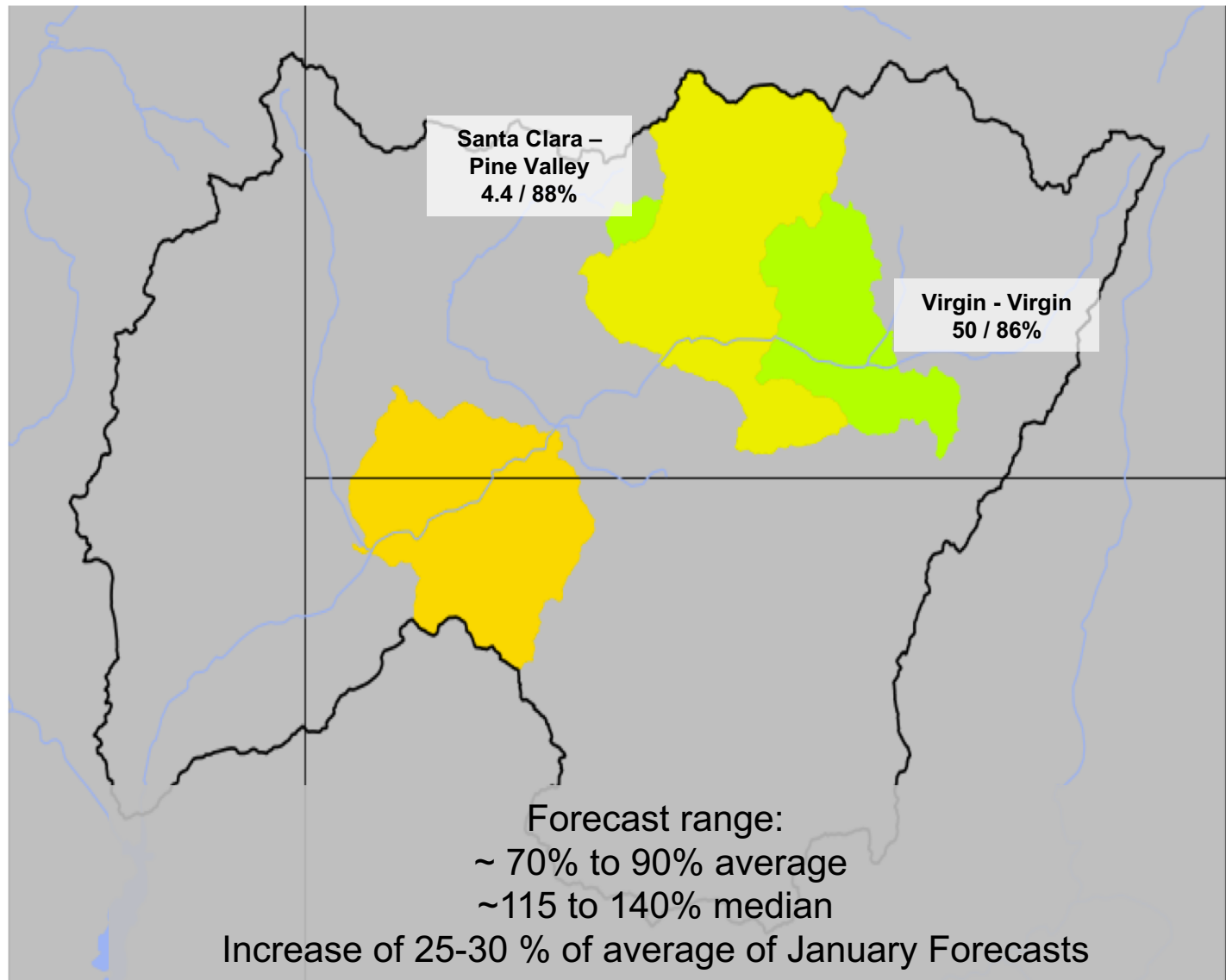
Upper Colorado April-July Streamflow Volume Forecasts (% of 1981-2010 average)

Lake Powell:
5300 KAF / 74 % average



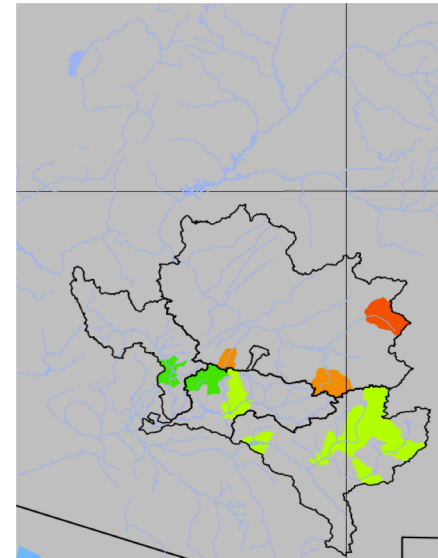
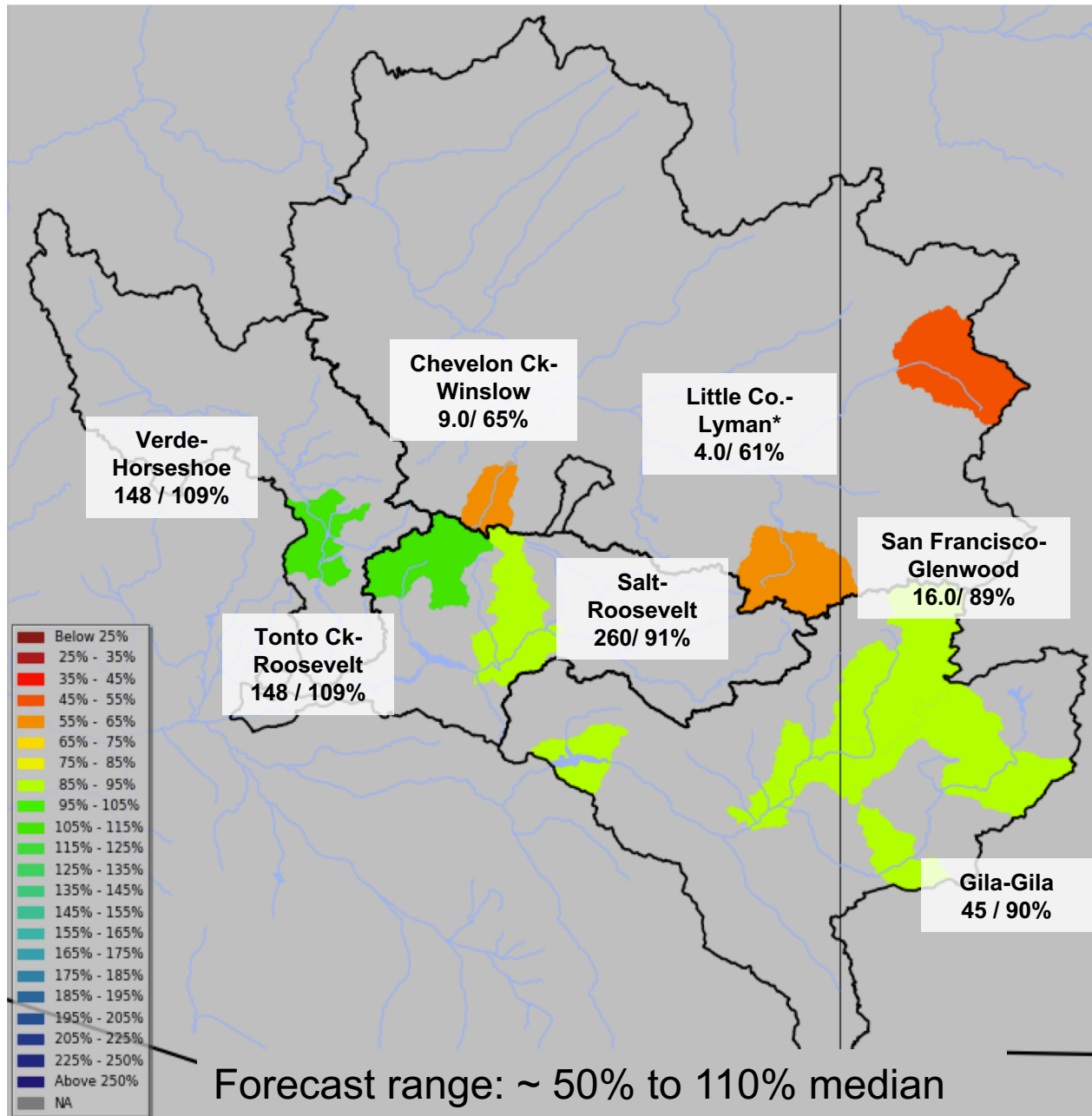
Lower Colorado (Virgin River) April-July Streamflow Volume Forecasts

Forecasts as of Feb 1 2019



Lower Colorado Feb-May forecast streamflow volumes (1000's acre-feet / % of 1981-2010 median)

Forecasts as of
Feb 1 2019



* Feb-June forecast period

Tracking the model guidance between forecasts: Evolution Plots



COLORADO BASIN RIVER FORECAST CENTER

NATIONAL WEATHER SERVICE / NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

[HOME](#)

[RIVERS](#)

[SNOW](#)

[WATER SUPPLY](#)

[RESERVOIRS](#)

[WEATHER](#)

[CLIMATE](#)

[HELP](#)

[ABOUT](#)

[NEWS](#)

[SEARCH](#)

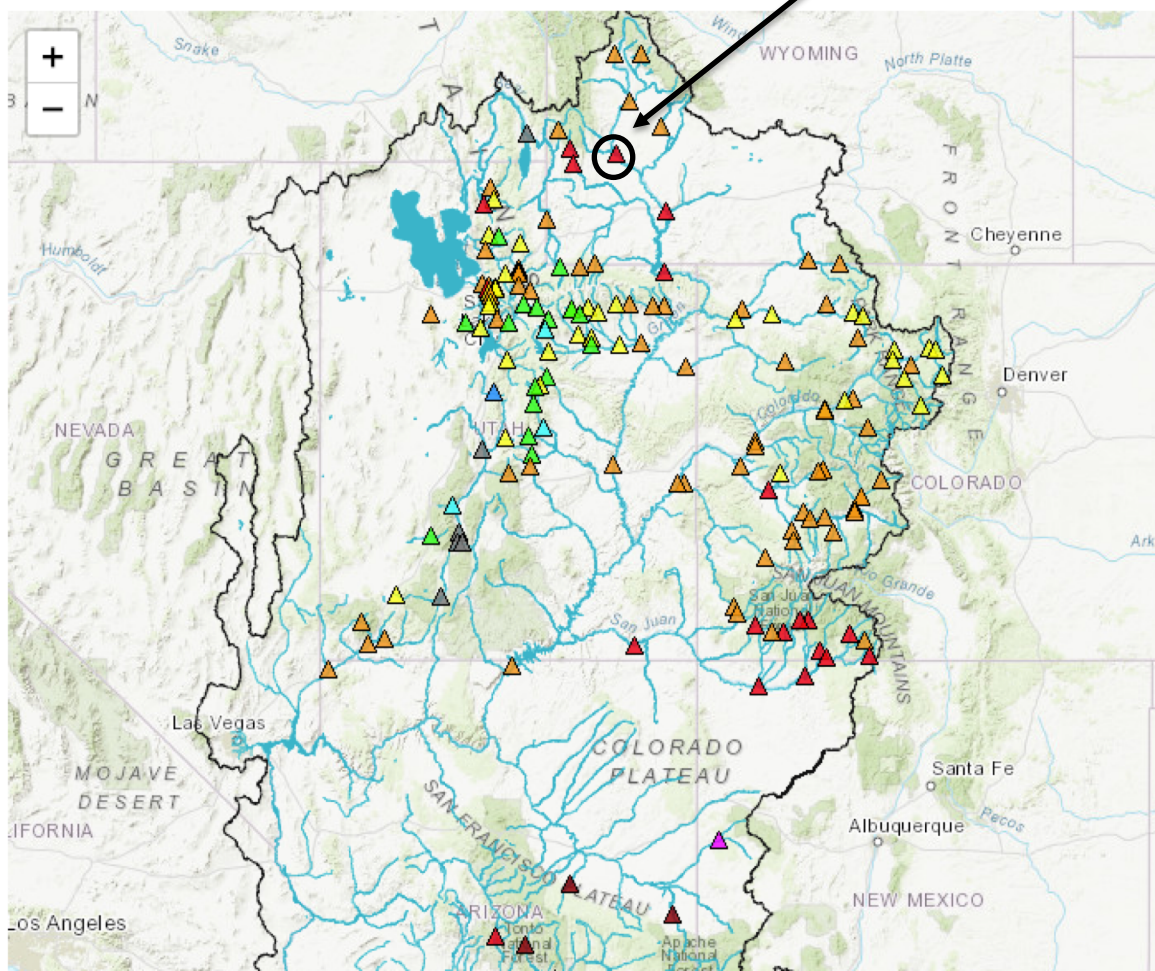
News

Register for 2019 Water Supply Webinars [More Info...](#)

Conditions Map

[Help](#)

Click on Fontenelle Reservoir point



[River Conditions](#)

[Snow Conditions](#)

[Water Supply Forecasts](#)

First of Month Forecast Date: 2019-2-1

[Help](#)

Latest Model Run Date: 2019-02-05

☒ Show [Hide Other Types](#)

☒ First of Month Forecast Percent Average

☐ First of Month Forecast Percent Median

☐ Latest Model Guidance Percent Average

☐ Latest Model Guidance Percent Median

▲ < 30%

▲ 30-50%

▲ 50-70%

▲ 70-90%

▲ 90-100%

▲ 100-110%

▲ 110-130%

▲ 130-150%

▲ 150-200%

▲ 200-300%

▲ 300-500%

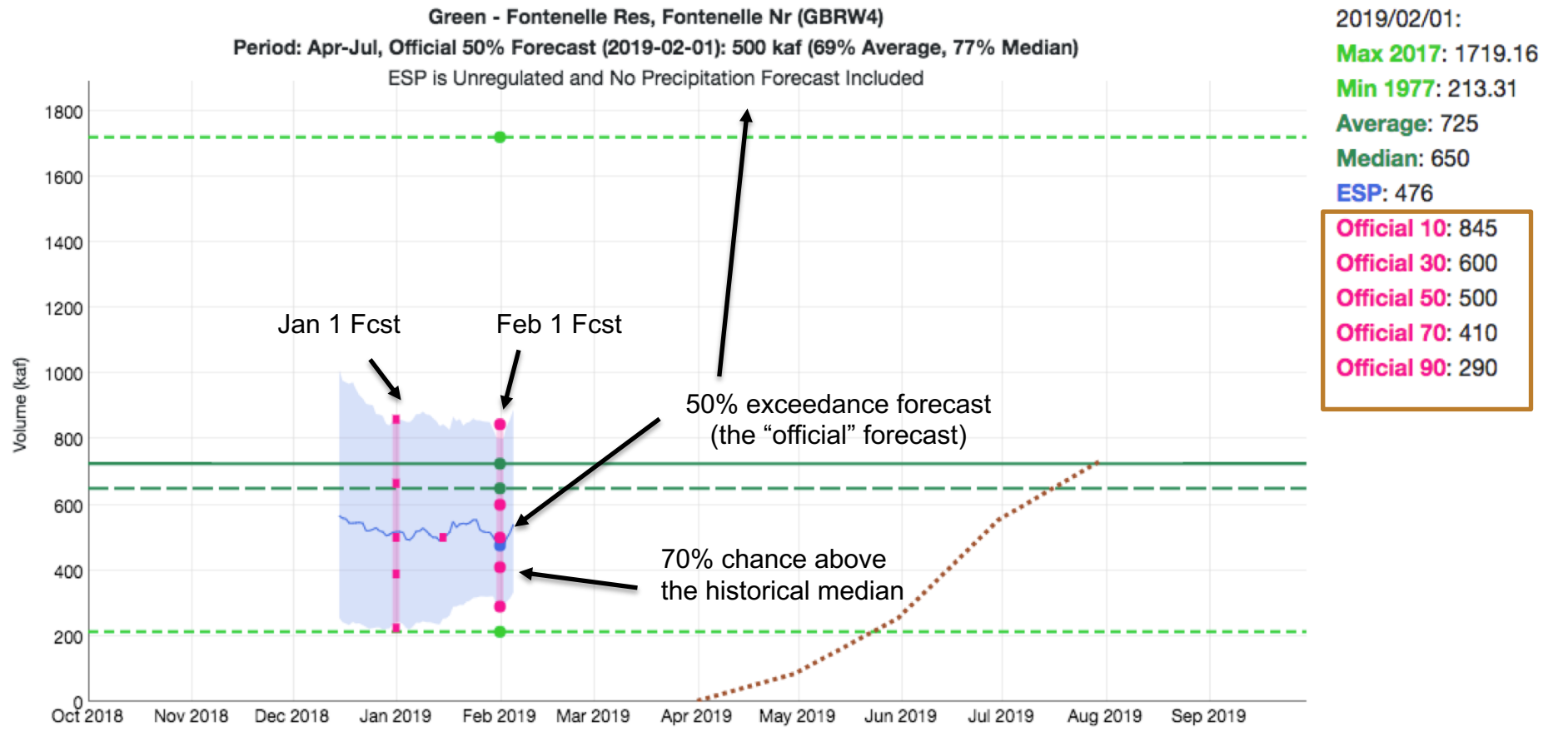
▲ >500%

▲ Regulated

△ No Forecast

Forecast Evolution Plot: Fontenelle Reservoir Inflow

Water Supply Forecast

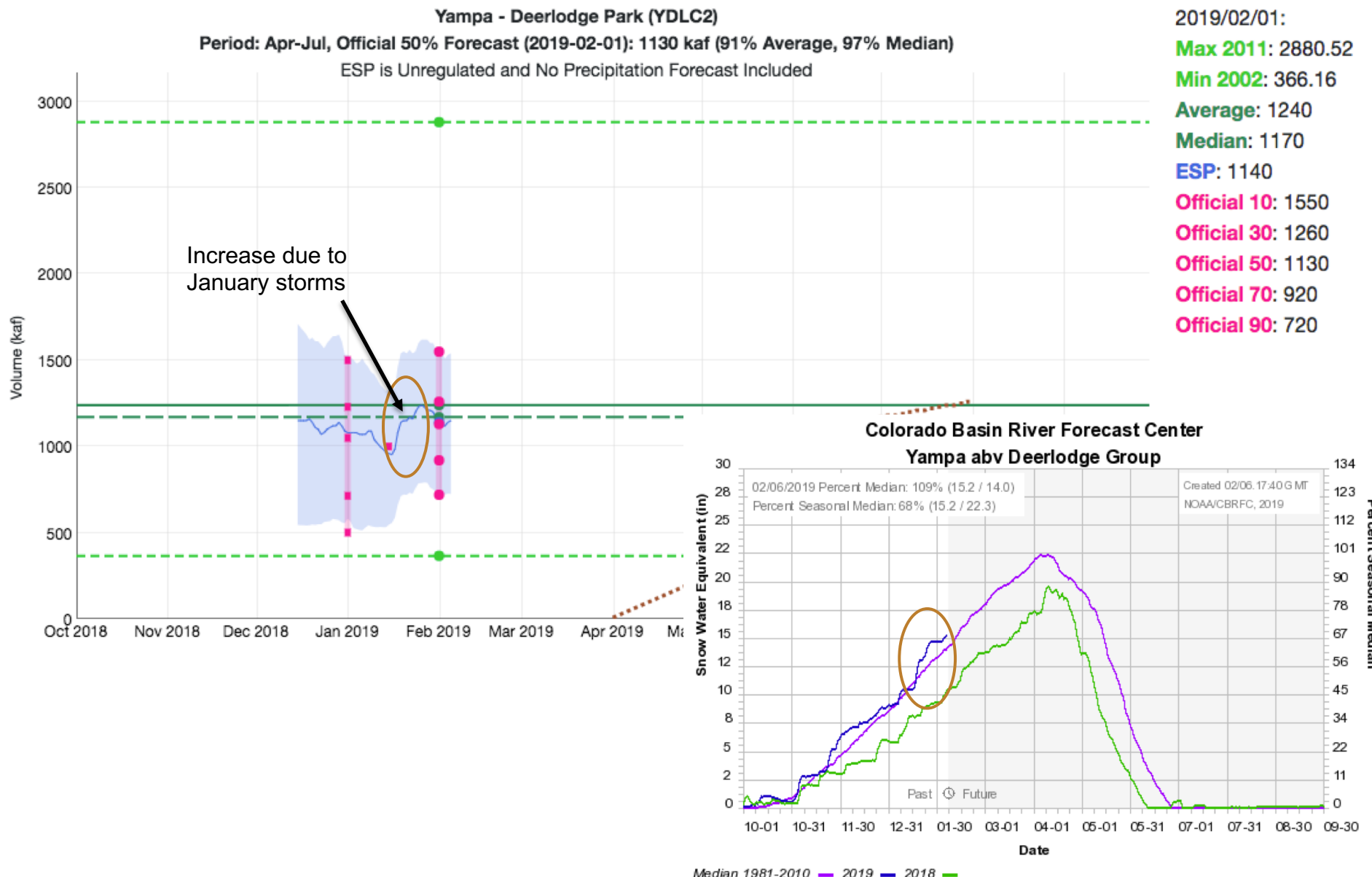


ESP – Ensemble Streamflow Prediction

www.cbrfc.noaa.gov select “Water Supply” from dropdown menu

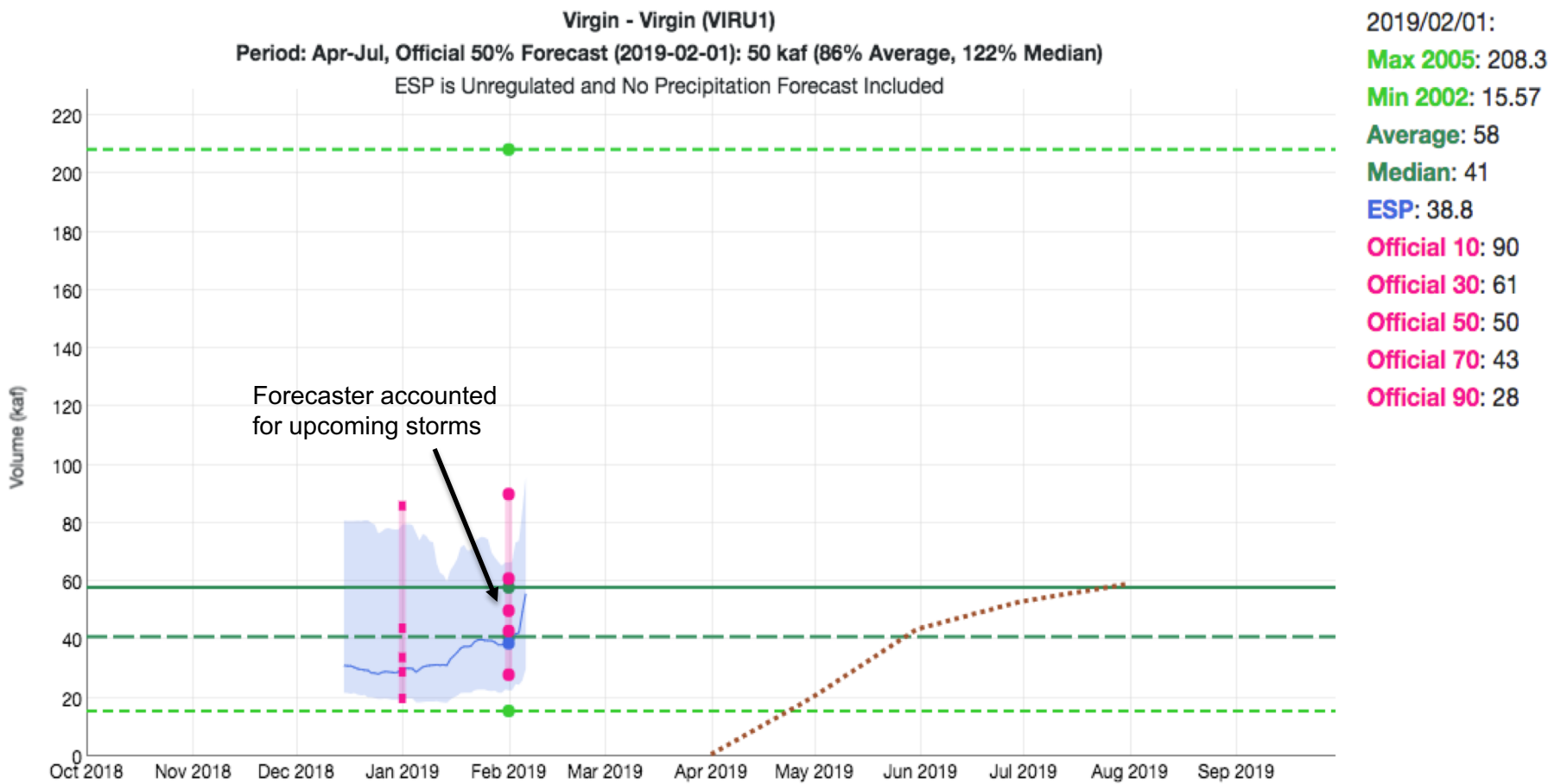
Forecast Evolution Plot: Yampa River @ Deerlodge

Water Supply Forecast



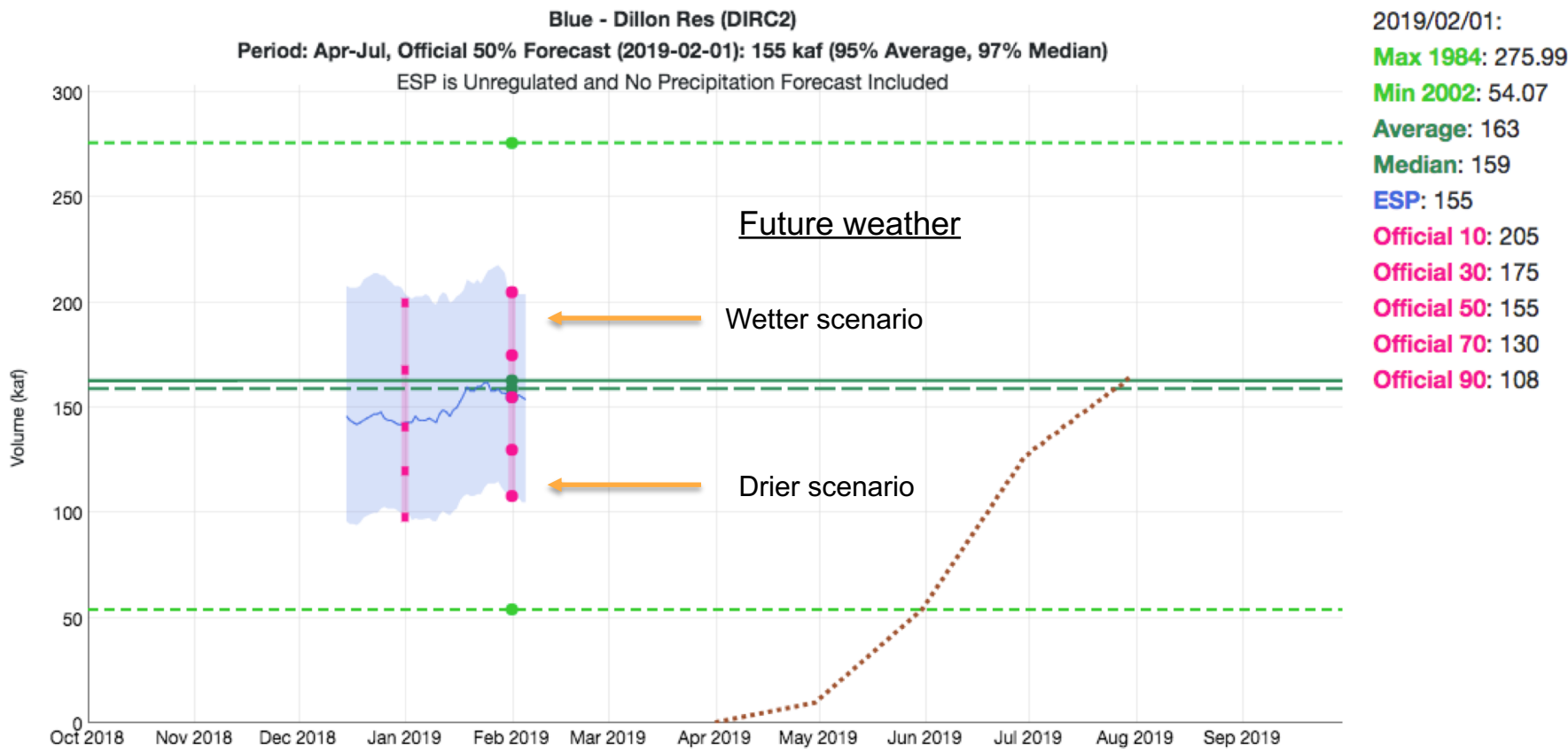
Forecast Evolution Plot: Virgin River @ Virgin (Lower Colorado Basin)

Water Supply Forecast



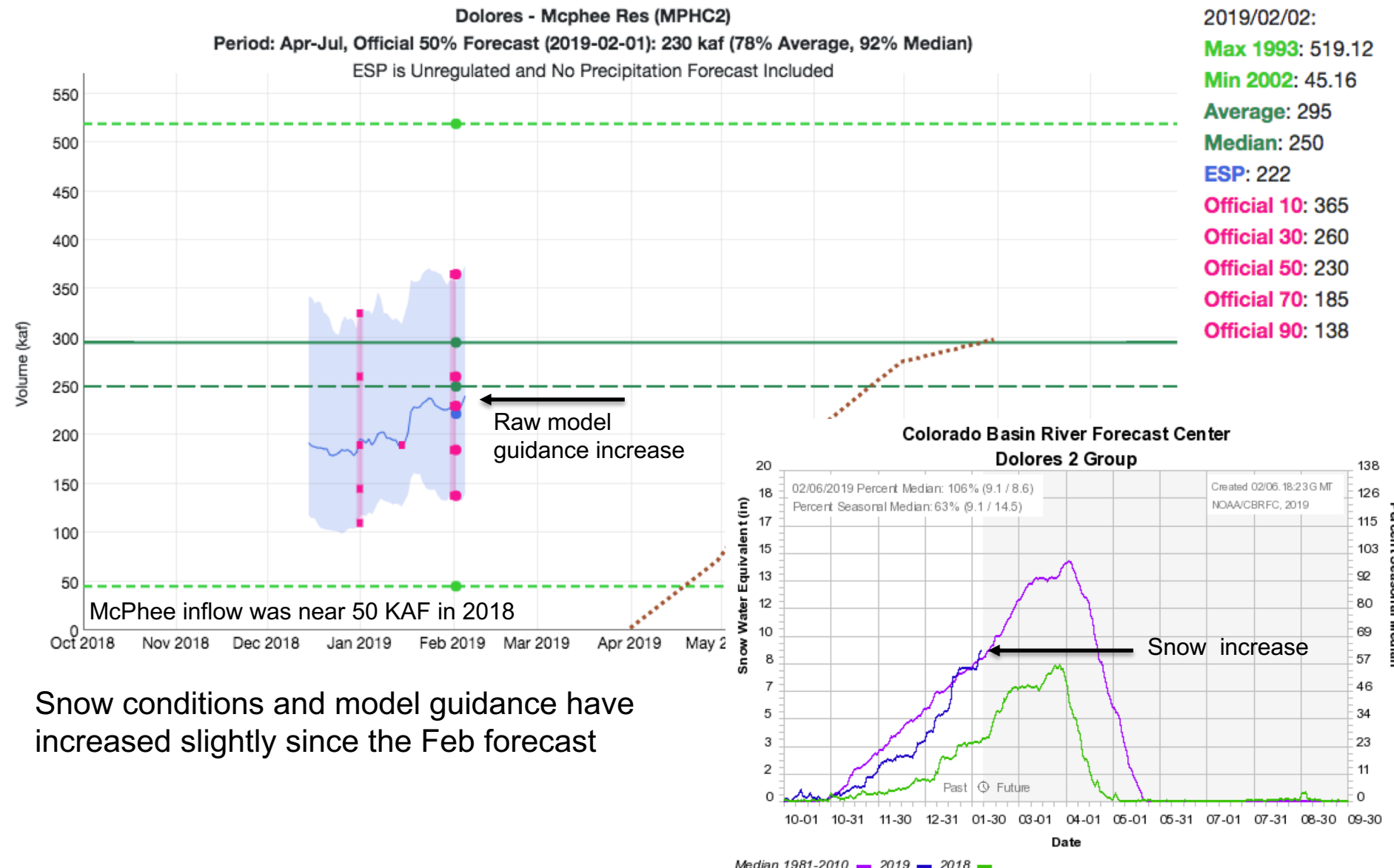
Forecast Evolution Plot: Dillon Reservoir Inflow

Water Supply Forecast



Forecast Evolution Plot: McPhee Reservoir Inflow

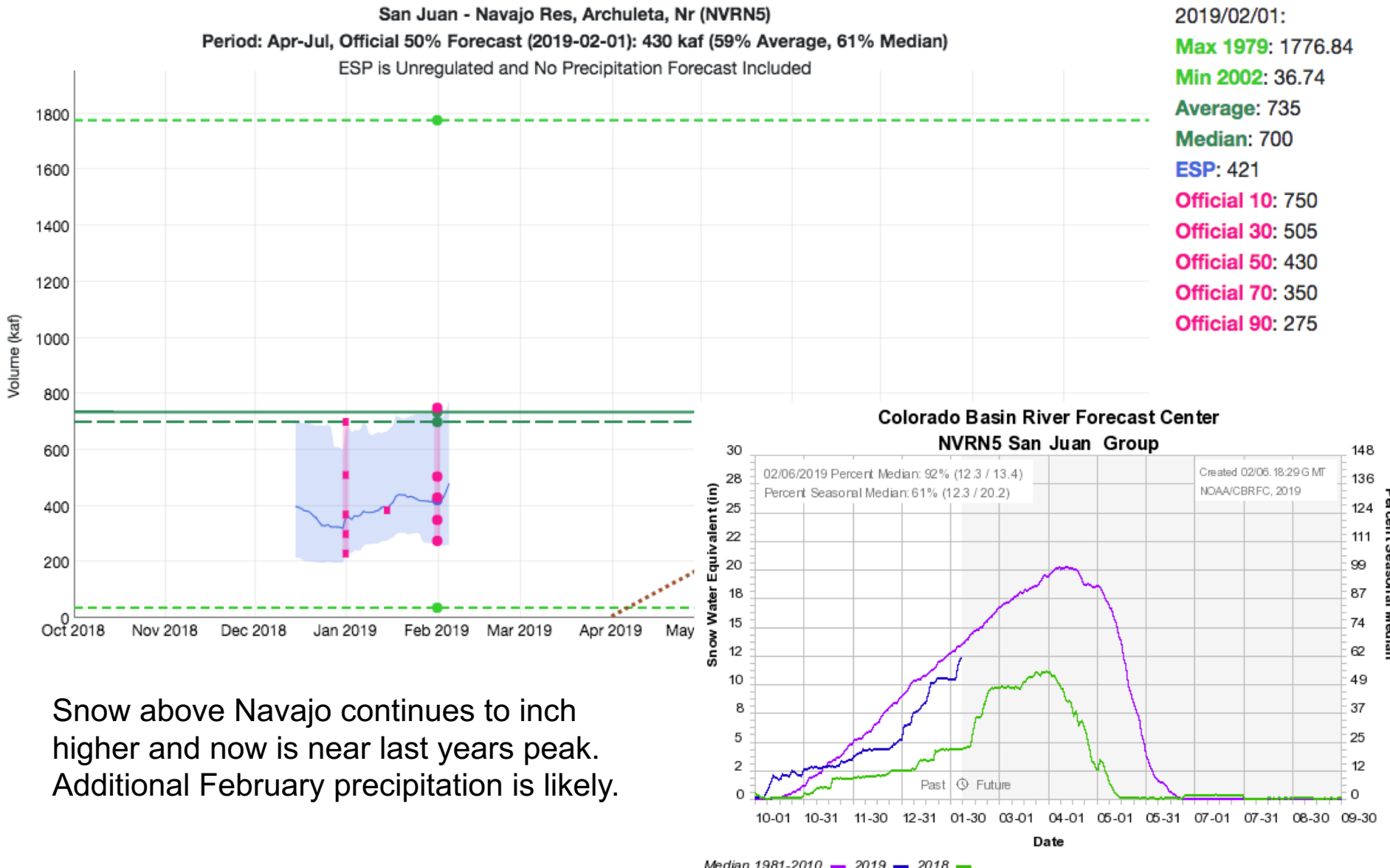
Water Supply Forecast



Snow conditions and model guidance have increased slightly since the Feb forecast

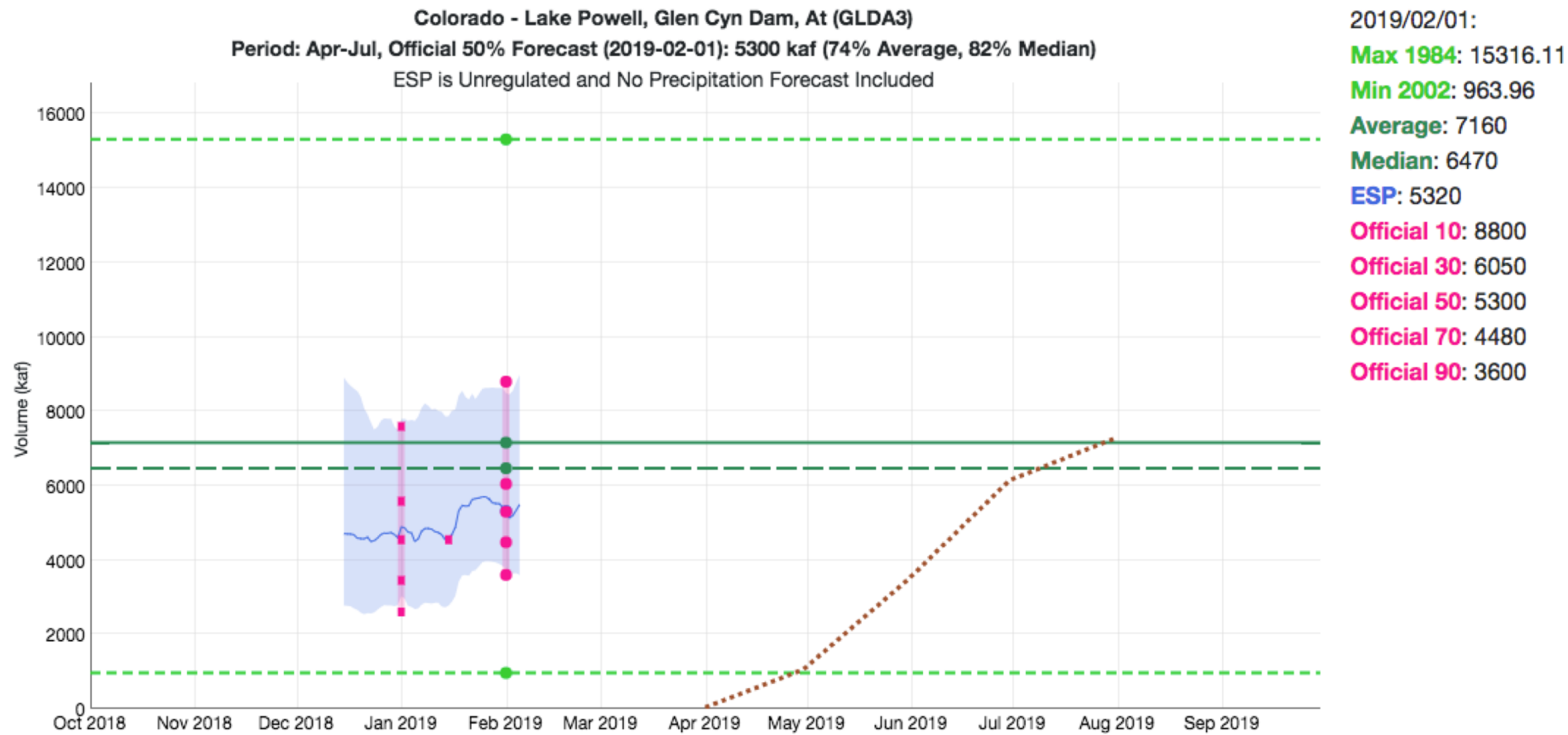
Forecast Evolution Plot: Navajo Reservoir Inflow

Water Supply Forecast



Forecast Evolution Plot: Lake Powell Inflow

Water Supply Forecast

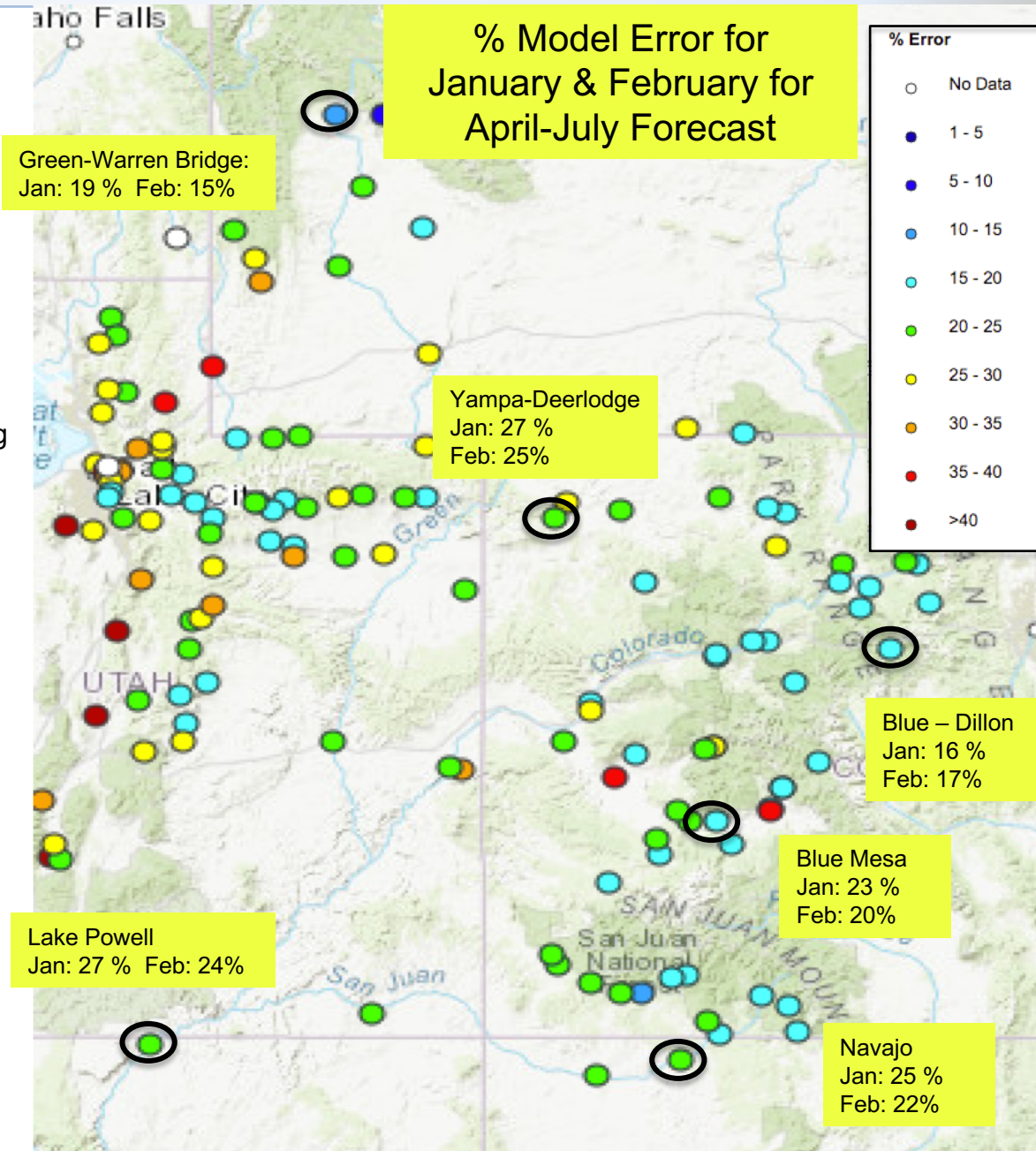


Since early January Lake Powell inflow forecast increased 750 KAF
(about a 10% of average increase)

Forecast Validation: Historical model error improves January to February

Historical Model Error 1981-2010

- Generally improvement in model mean absolute forecast error between January and February
- Forecasts are better than just going with average
- Error tends to decrease each month into the spring
- Where We Do Better:
 - Headwaters
 - Primarily snow melt basins
 - Known diversions / demands
- Where We Do Worse:
 - Lower elevations (rain or early melt)
 - Downstream of diversions / irrigation
 - Little is known about diversions / demands

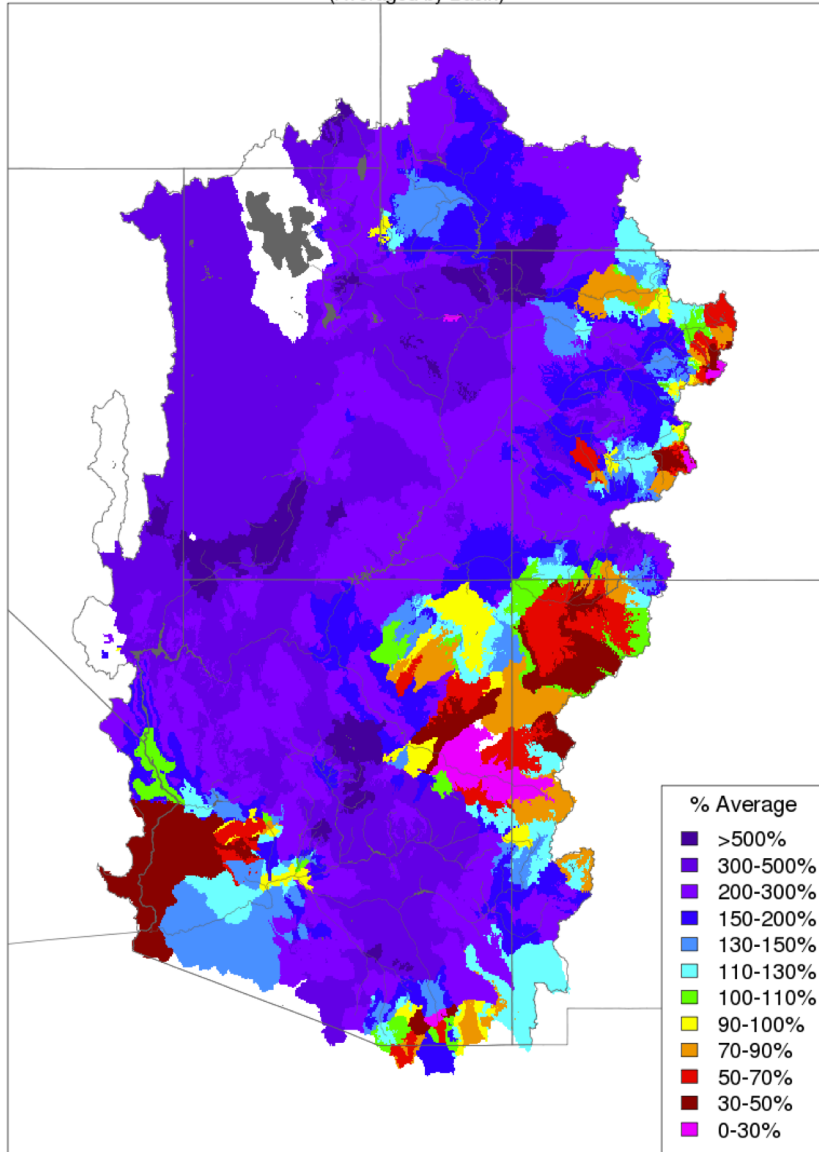


February 1st – 6th precipitation

The early February precipitation was taken into account for many of the water supply forecasts

Month to Date Precipitation - February 06 2019

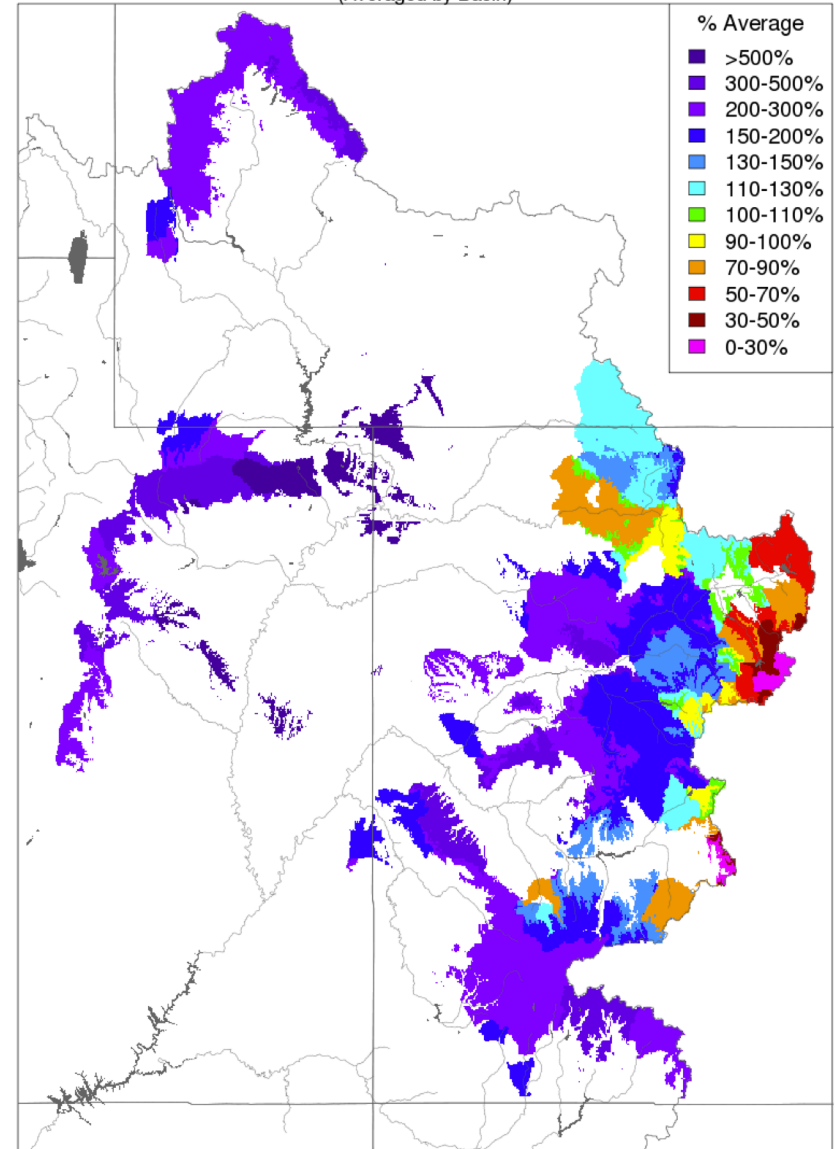
(Averaged by Basin)



Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

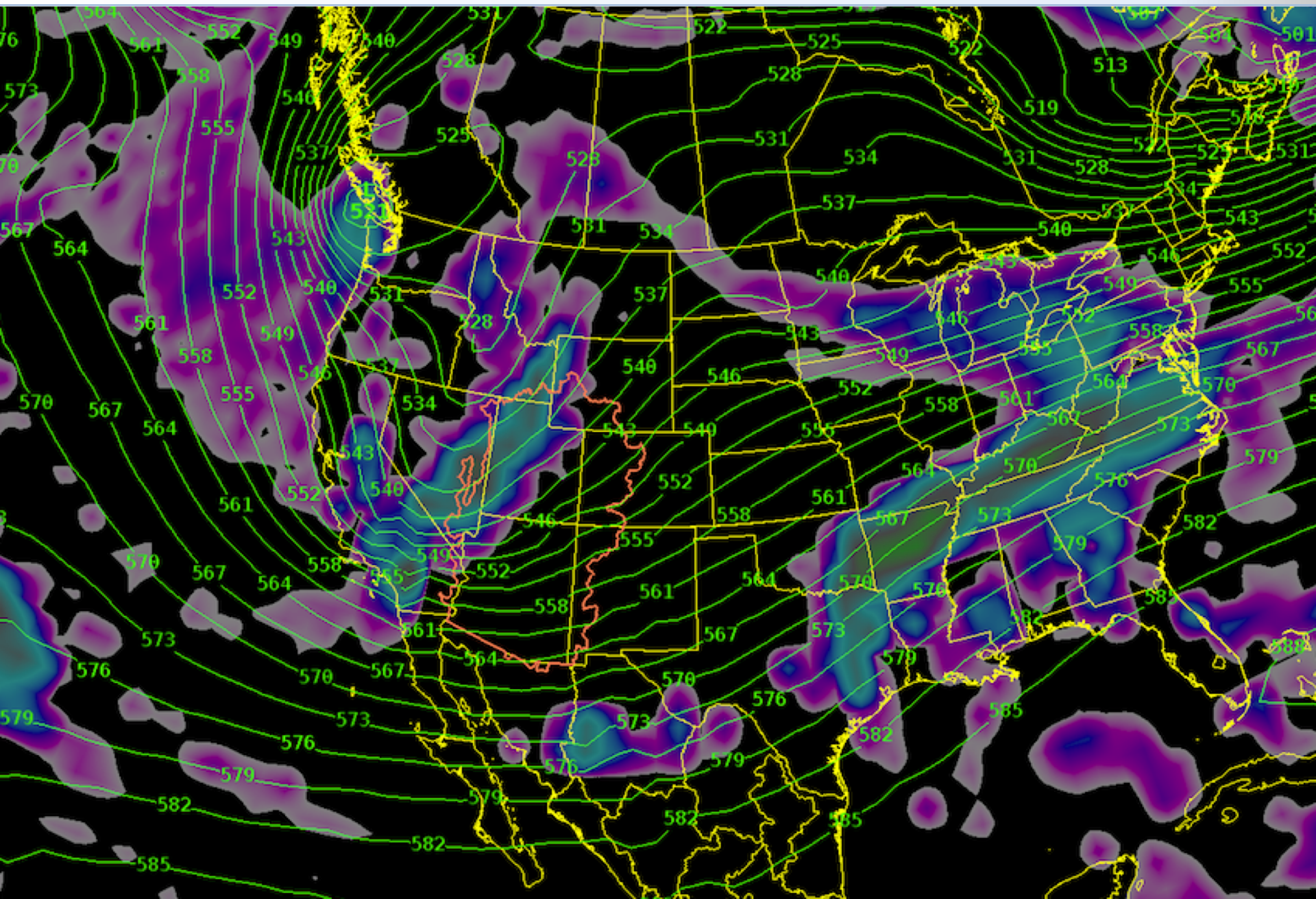
Month to Date Precipitation - February 06 2019

(Averaged by Basin)

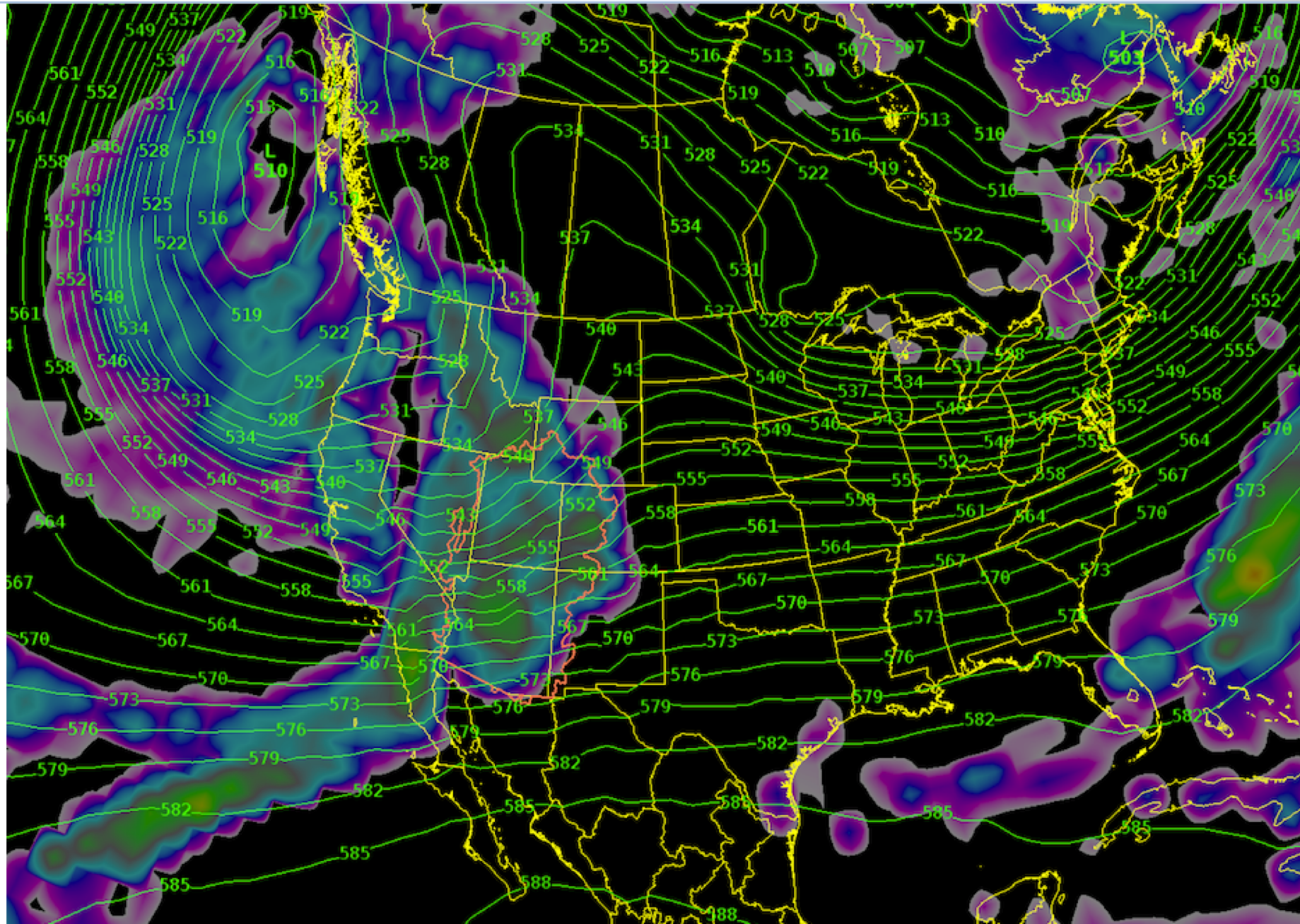


Prepared by NOAA, Colorado Basin River Forecast Center
Salt Lake City, Utah, www.cbrfc.noaa.gov

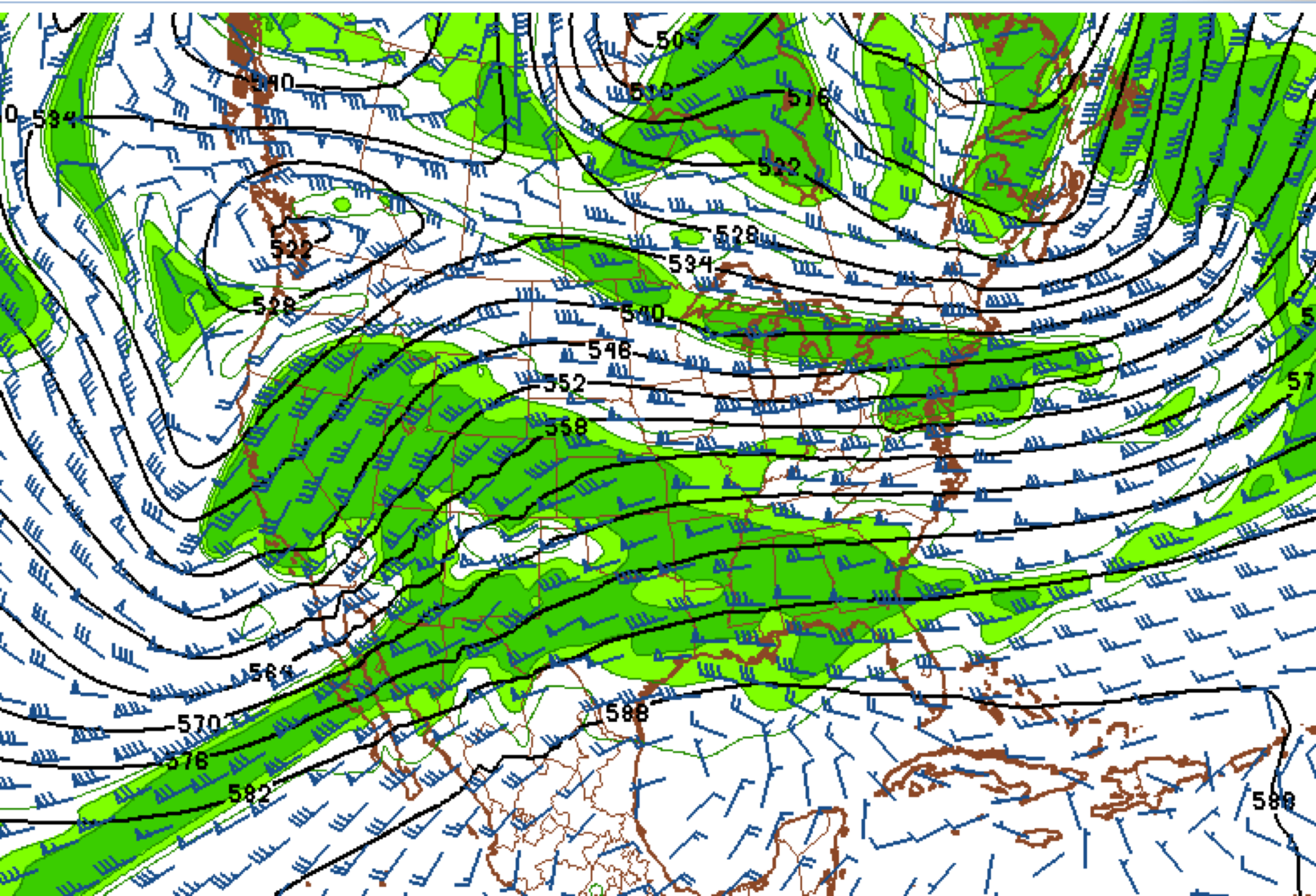
Upcoming Weather – Quick moving system impacting northern areas Feb 10-11



Potentially more potent system impacting entire area late next week Feb 15-16



Pattern remains progressive into the 3rd week of February



Upcoming Weather – Active pattern likely through at least mid month

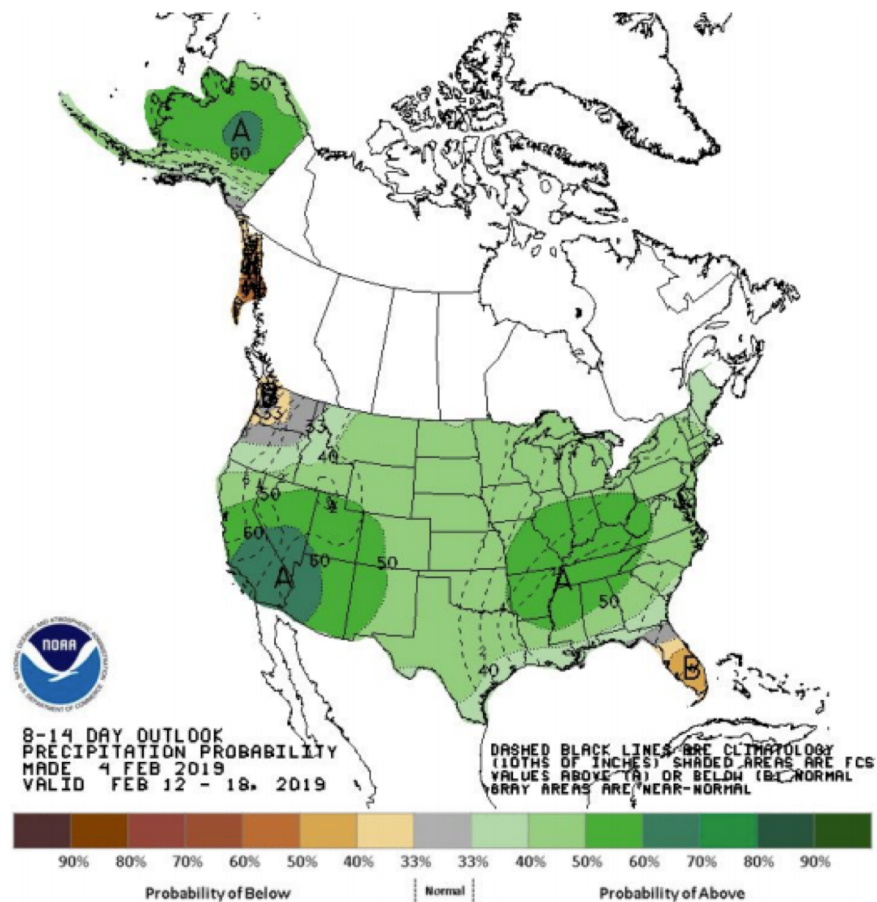
Weak storm system impacting the northern areas Feb 10-11

Potentially a more significant storm impacting the entire area late next week (Feb 15-16)

Models suggest active weather possibly beyond that (less confidence in the details)

An increase in snowpack over most areas between now and mid/late February stands a good chance.

Above average precipitation for the month of February appears likely.



2019 water supply briefing schedule

2019 monthly water supply briefings for the Colorado Basin

Thursday March 7th @ 11 am MT

Thursday April 4th @ 11 am MT

Tuesday May 7th @ 11 am MT

Great Basin webinars are same dates at 1:30 pm MT (there is one today)

Peak flow briefing early March. Additional briefings scheduled as needed.

Date/Times are subject to change. All registration information has been posted to the CBRFC web page.

CBRFC Water Supply Contacts

Please contact us with any questions

Michelle Stokes – Hydrologist In Charge

michelle.stokes@noaa.gov

Paul Miller– Service Coordination Hydrologist

paul.miller@noaa.gov

Basin Focal Points (Forecasters)

Greg Smith – San Juan, Gunnison, Dolores Focal Point

greg.smith@noaa.gov

Ashley Nielson – Green River Basin, Lake Powell Focal Point

ashley.nielson@noaa.gov

Cody Moser – Upper Colorado Mainstem Focal Point

cody.moser@noaa.gov

Tracy Cox and Zach Finch – Lower Colorado Basin, Virgin Focal Point

tracy.cox@noaa.gov

zach.finch@noaa.gov

Brent Bernard – Six Creeks, Provo , Sevier Focal Point

brent.bernard@noaa.gov

Patrick Kormos – Bear, Weber Focal Point

patrick.kormos@noaa.gov