CBRFC
Water Year 2020
Early Season Water Supply Outlook

December 18, 2019

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Hydrologist

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

Please mute your phone until the question period

2020 Early Season Water Supply Outlook

Observed precipitation over the past several months

Soil moisture conditions entering winter

Current snow conditions

2020 water supply - early season model guidance

Water supply forecast evolution plot overview

Upcoming weather outlook

2020 water supply webinar schedule

Forecast points of contact

Phone: 1-877-929-0660
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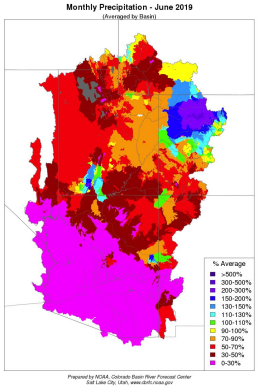
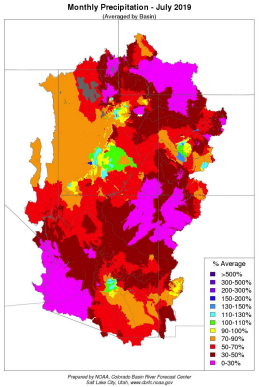
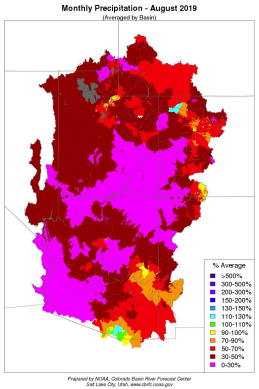
Please mute your phone until the question period

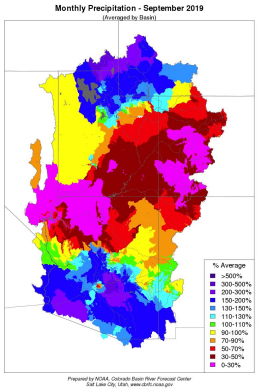
2019 June - December Observed Precipitation

Water Year 2019

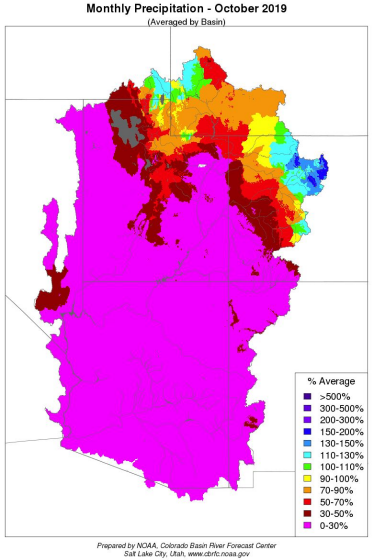


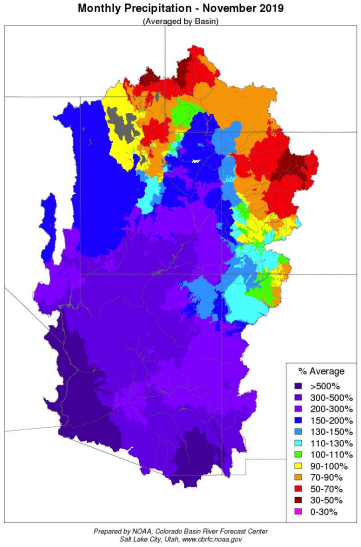


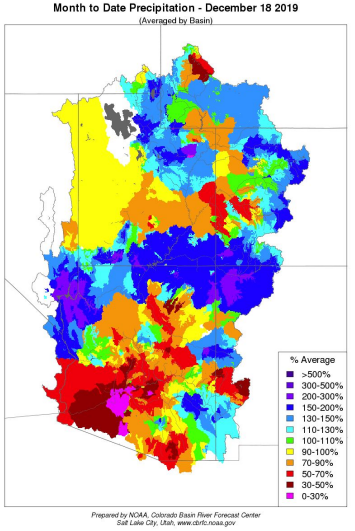




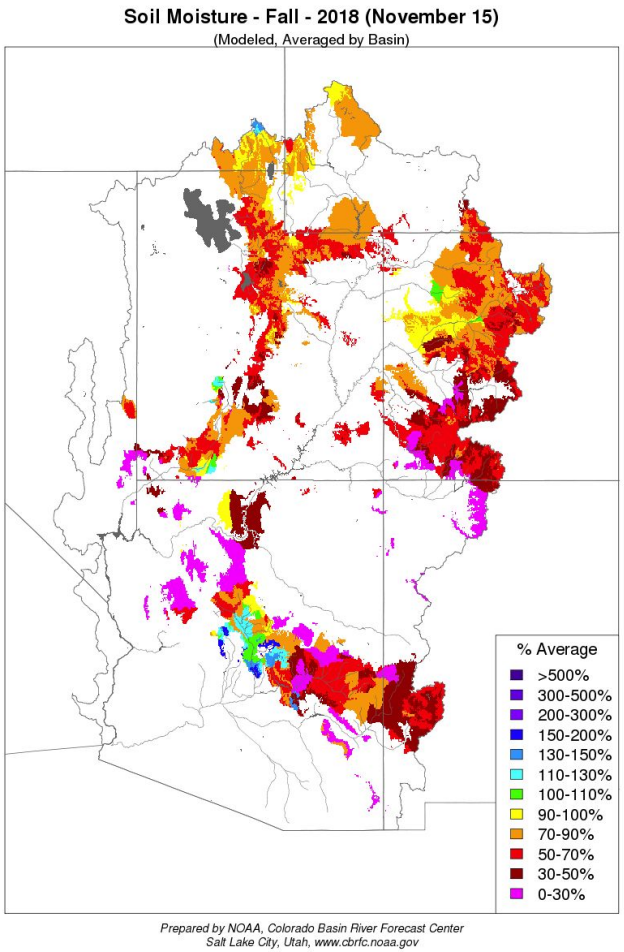
Water Year 2020

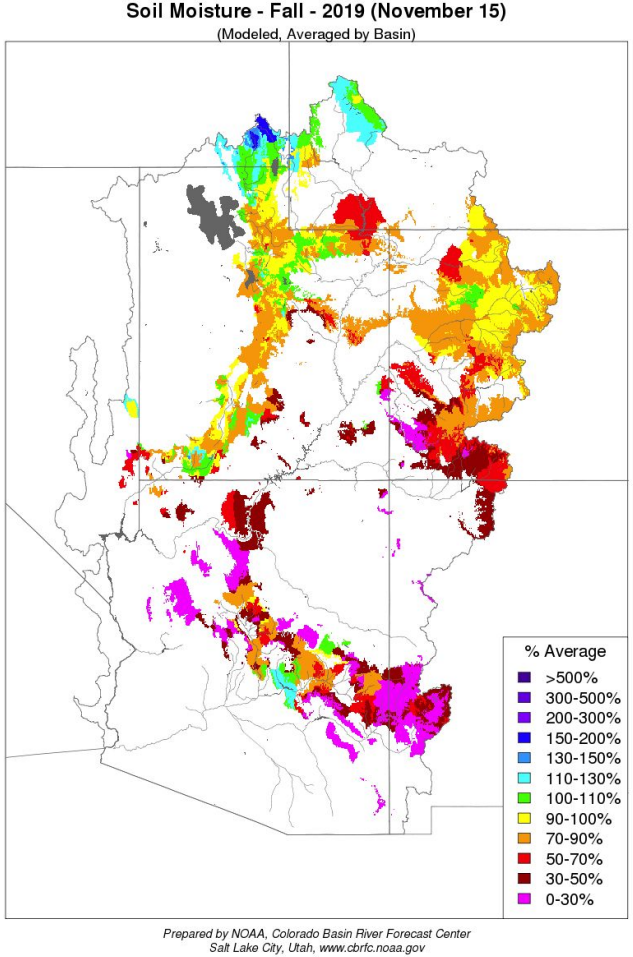






Fall Soil Moisture Conditions (Model) - 2019 / 2020 Comparison

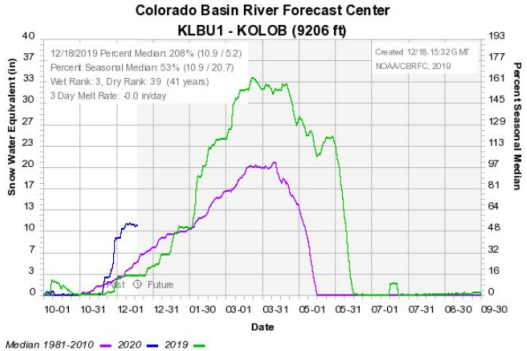




Current Observed Snow Conditions - SNOTEL (NRCS)

KLBU1 Snotel Plot

Station Info Snow Groups List Help Requery



Select multiple years and/or stations. Be sure to use your systems key-click combination to avoid inadvertent deselection.

Years

median
2020
2019
avg
2018
2017
2016
2015
2014
2013
2012
2011
2010
2009
2008

Stations

KLBU1 KOLOB (9206 ft)
AGUU1 AGUA CANYON (8900 ft)
APSC2 APISHAPA (10000 ft)
ARPC2 ARAPAHO RIDGE (10960 ft)
ATAI1 ATLANTA SUMMIT (7580 ft)
BAMN5 BATEMAN (9300 ft)
BASI1 BANNER SUMMIT (7040 ft)
BBSA3 BAKER BUTTE SUMMIT (7700 ft)
BBSW4 BLIND BULL SUM (8650 ft)
BCVC2 BEAVER CK VILLAGE (8500 ft)
BCZU1 BUCK PASTURE SNOWCOURSE (9700 ft)
BECI1 BEAR CANYON (7900 ft)
BENU1 BEVANS CABIN SNOWC NR TOOELE (6430 ft)
BERN2 BEAR CK (8040 ft)
BFTU1 BLACK FLAT-U.M. CK (9462 ft)

Y axis

Percent Seasonal Median
Percent Median to Date

Similar/Historical Years

Off
Closest Pattern
Peak to Date
Current Observation
Highest Year
Lowest Year

☐ Show Tabular Data
☐ High Resolution

Apply

Raw SNOTEL data from NRCS.

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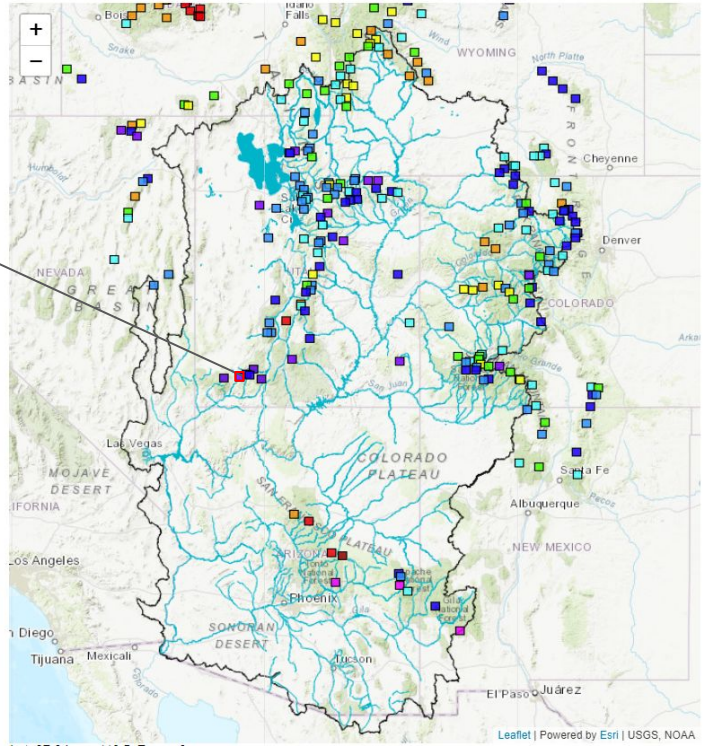
News

Wednesday, December 18th, 10 am MT: CBRFC Early Season Water Supply Outlook Webinar. Registration -> More Info...
2020 Water Supply Forecast Webinar Schedule and Registration -> More Info...

Conditions Map

Help



- River Conditions
- Snow Conditions

Points | Grids | Model

Data Updated: 2019-12-18 Help

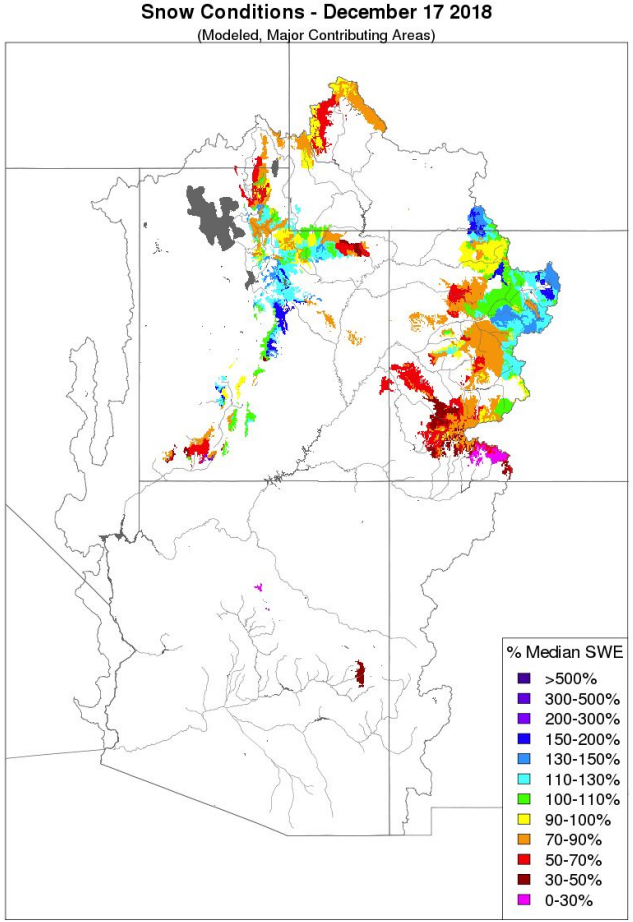
☑ Show Hide Other Types
☐ No Data
☐ No Average
☑ < 7000 ft
☑ 7000-8000 ft
☑ 8000-9000 ft
☑ 9000-10000 ft
☑ > 10000 ft

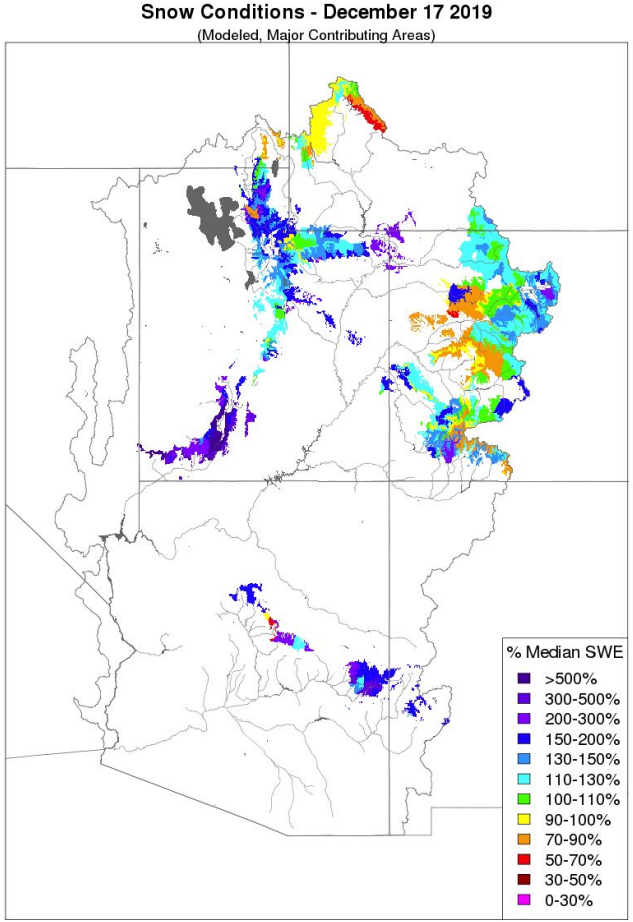
○ Percentiles
○ Percent Average
◉ Percent Median

☐ No Data
< 30%
30-50%
50-70%
70-90%
90-100%
100-110%
110-130%
130-150%
150-200%
200-300%
300-500
>500%

- Water Supply Forecasts
- Peak Flood Probablity

Current CBRFC Model Snow Conditions - 2019 / 2020 Comparison





Water Supply - Early Season Model Guidance

At this point in time…

- Ideally model soil moisture & snow states are accurate and representative of current conditions.
- Model guidance is still heavily influenced by soil moisture.
- Early season forecast errors are generally 20-40% and typically improve through the spring; the primary source of forecast uncertainty is future weather.
- Snowpack - don’t put too much weight into mid-December conditions.
  - Typically around 30-35% of the seasonal snow has occurred by mid-December
  - Historical median (or normal) snowpack values are still small compared to later in the season

Ensemble Streamflow Prediction (ESP) Overview

ESP Methodology: current hydrologic model states (soil moisture, snow)
+ future weather (precip/temp) scenarios based on historical (1981-2015) observations
= April-July streamflow volume

Example: Dillon Reservoir (Inflow)

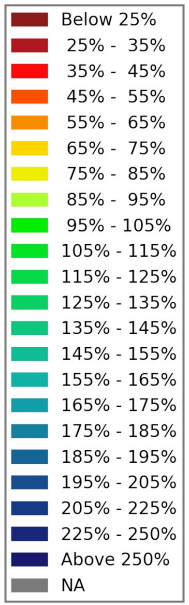
2020 current model states + 1981 weather = 119 kaf (thousand acre-feet)
2020 current model states + 1982 weather = 175 kaf
2020 current model states + 1983 weather = 216 kaf
.
.
.
2020 current model states + 2015 weather = 198 kaf

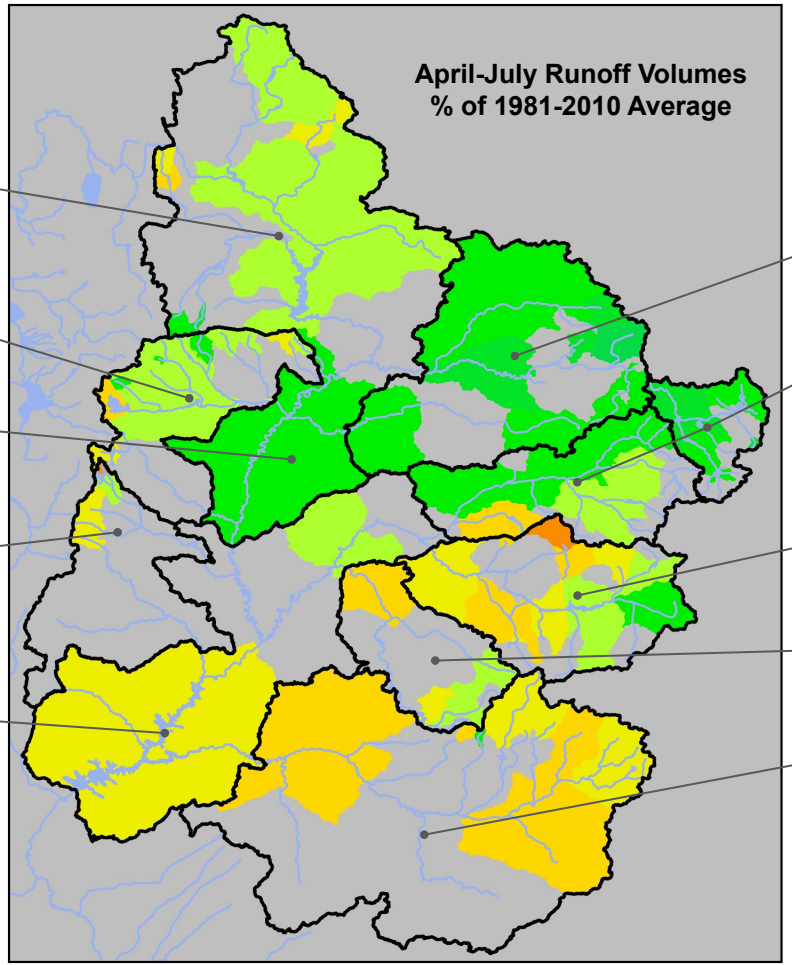
Final result is 35 different possibilities of April-July streamflow volume
-use statistical analysis to determine probabilistic outcomes:
-volume that has 50% chance of occurring (most probable)
-volume that has 10% chance of occurring (less likely)
-volume that has 90% chance of occurring (more likely)

$$\% \text{ Average} = \frac{\text{Most Probable Volume}}{\text{Average Observed Volume } (1981-2010)}$$

**Updated Daily*

ESP Model Guidance: Upper Colorado





Upper Green: 75-95%

Duchesne/Price: 80-95%

Lower Green: 90-100%

San Rafael/Dirty Devel: 65-85%

Lake Powell: 80%

Lake Powell summarizes the hydrologic conditions throughout the Upper Colorado River Basin.

White/Yampa: 95-110%

Upper CO: 90-105%

Gunnison: 70-90%

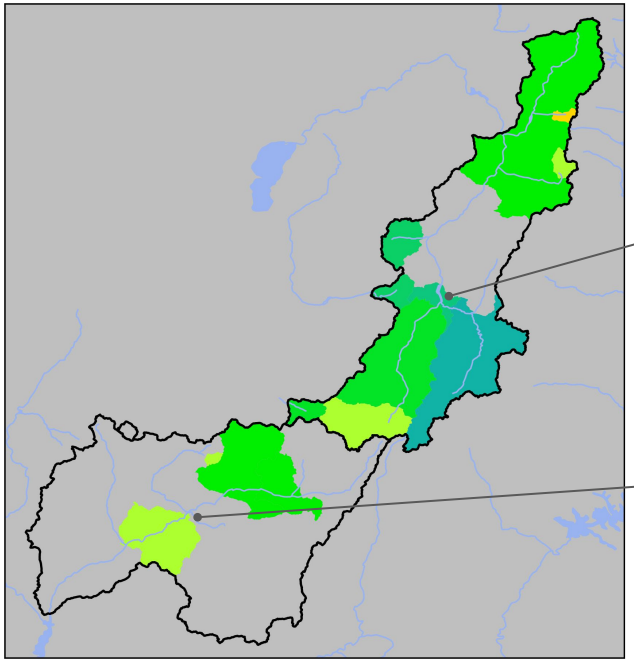
Dolores: 75-85%

San Juan: 70-85%

Dec 17 / 0qpf

ESP Model Guidance: Sevier, Virgin, Lower Colorado

Sevier & Virgin
April-July Runoff Volumes
% of 1981-2010 **Average**



Sevier: 90-130%

Virgin: 90-105%

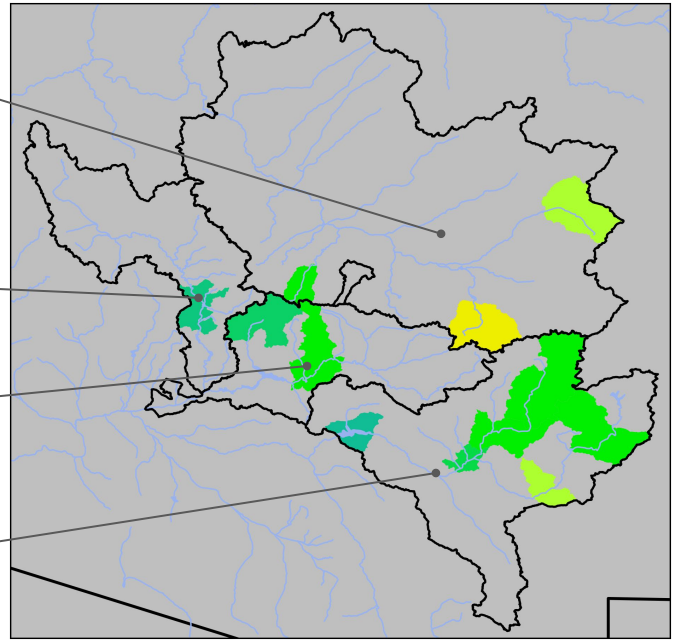
Lower Colorado
January-May Runoff Volumes
% of 1981-2010 **Median**

Little Colorado: 80-100%

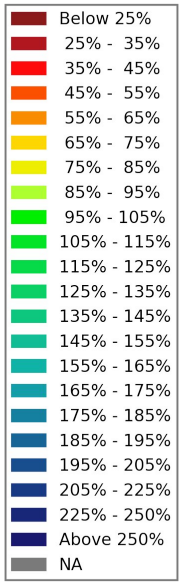
Verde: 135%

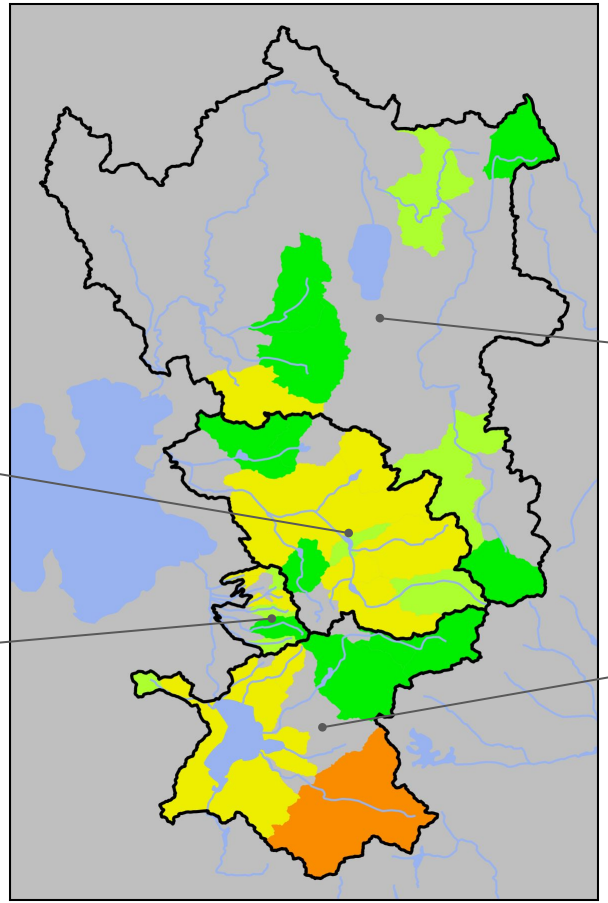
Salt: 105-135%

Upper Gila: 95-120%



ESP Model Guidance: Great Basin





April-July Runoff Volumes
% of 1981-2010 Average

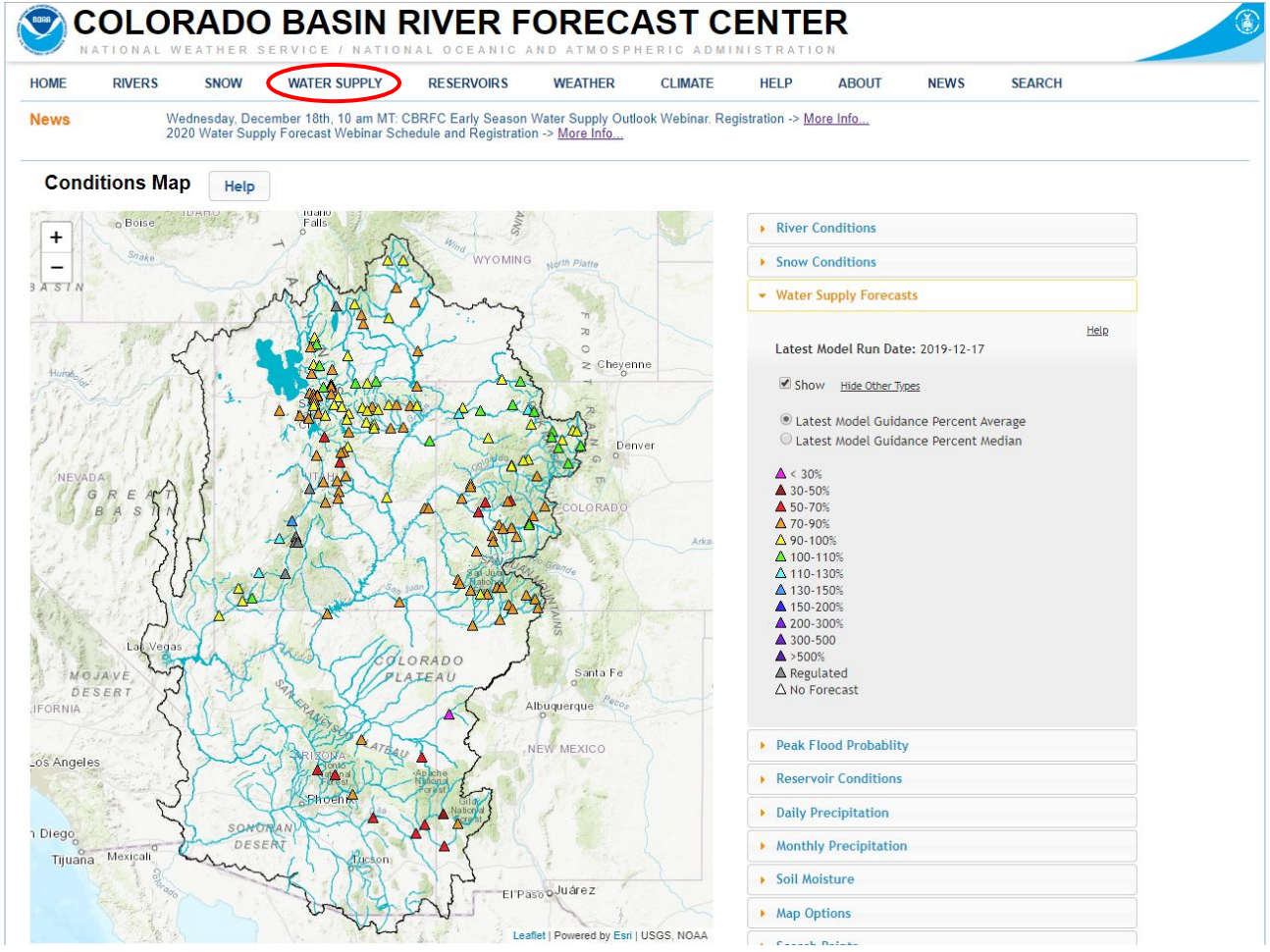
Bear: 90-105%

Weber: 85-100%

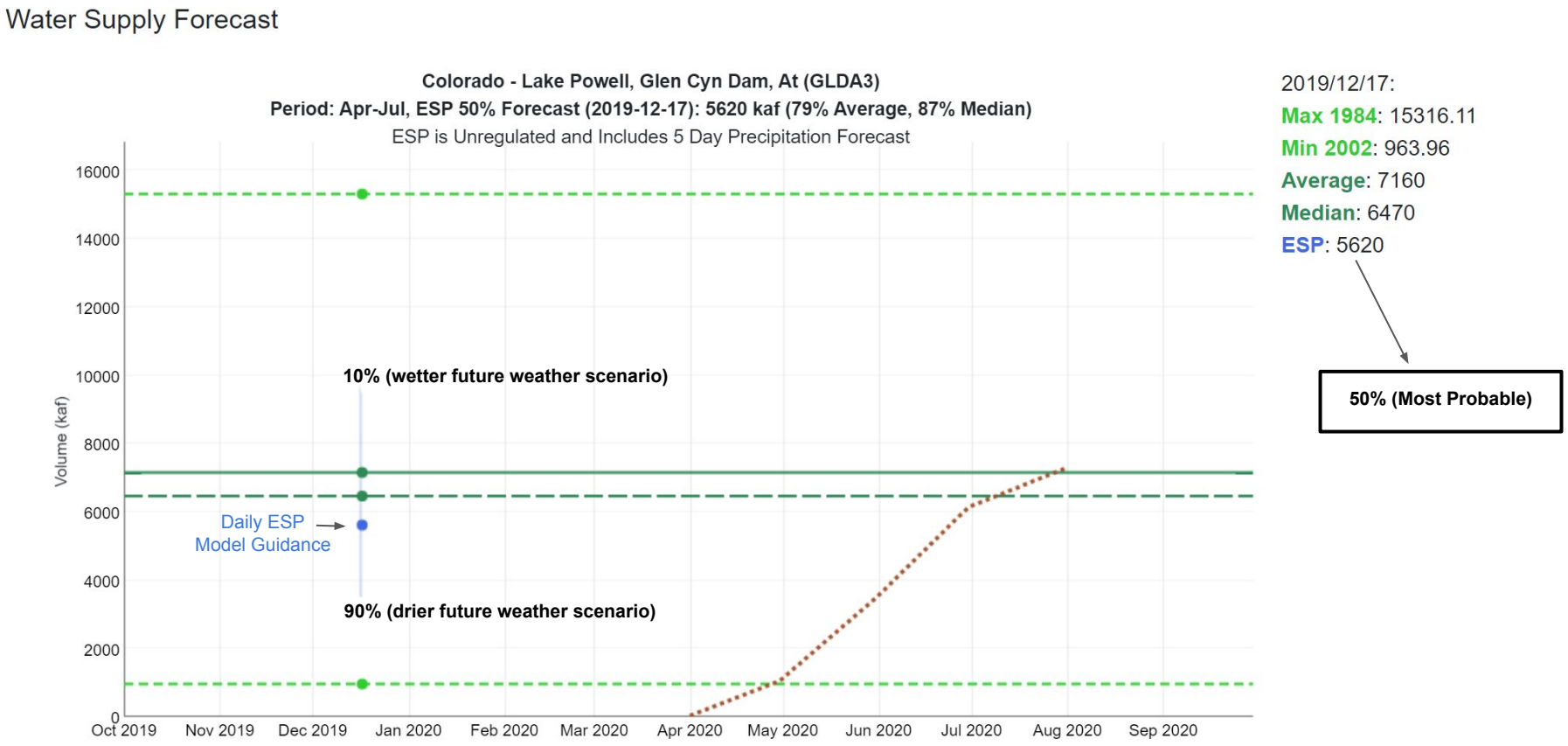
Six Creeks: 80-95%

Provo/Utah Lake: 70-100%

CBRFC Water Supply Forecasts

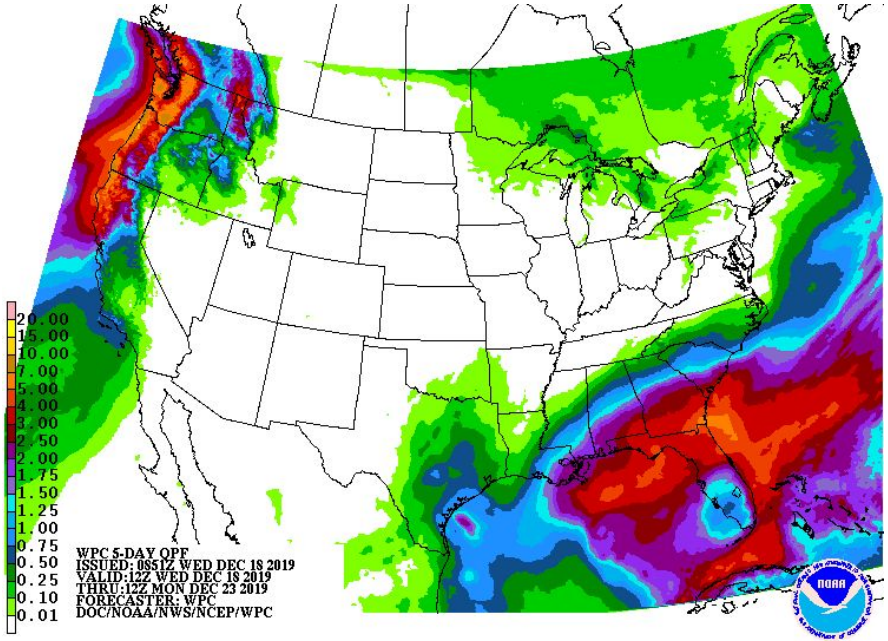


Water Supply Forecast Evolution Plot Overview



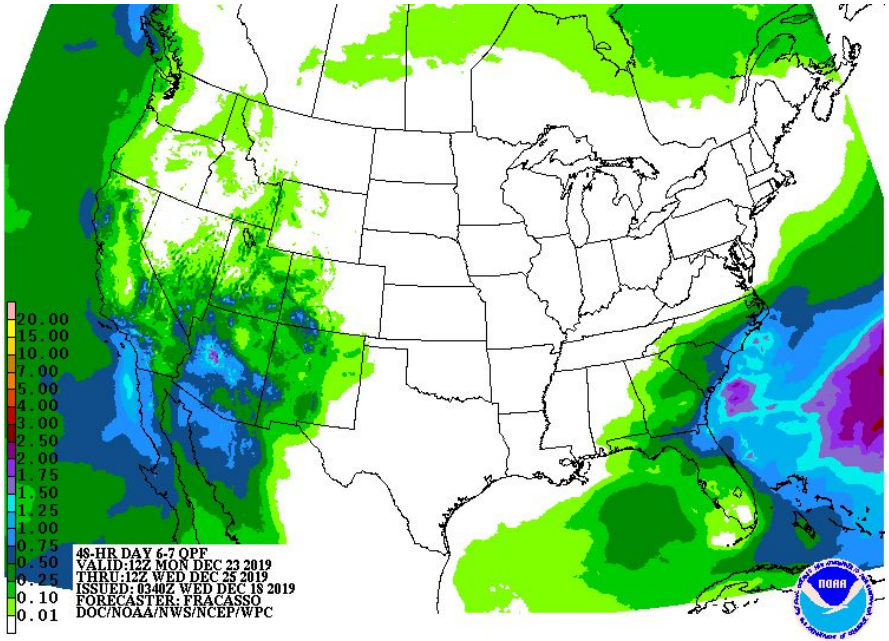
Upcoming Weather: Precipitation Outlook December 18th-24th

December 18-22



Expect ESP volume guidance to decrease over the next 5 days

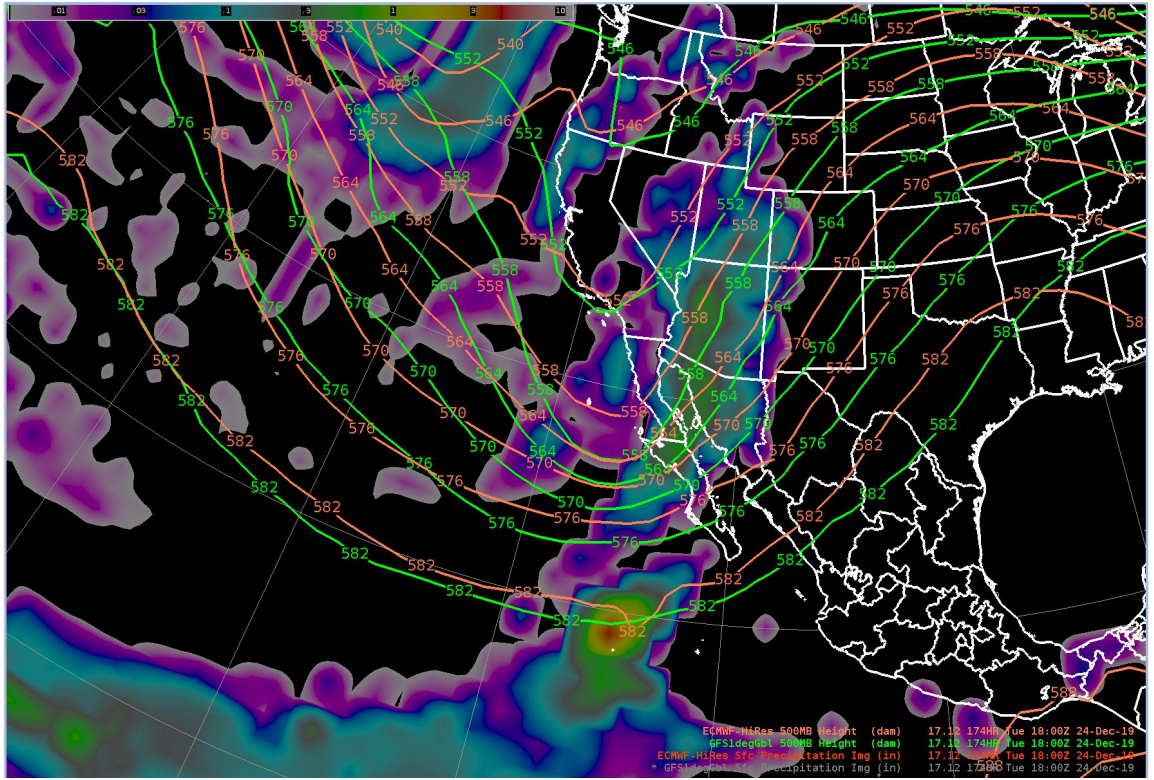
December 23-24



Positive impact to water supply

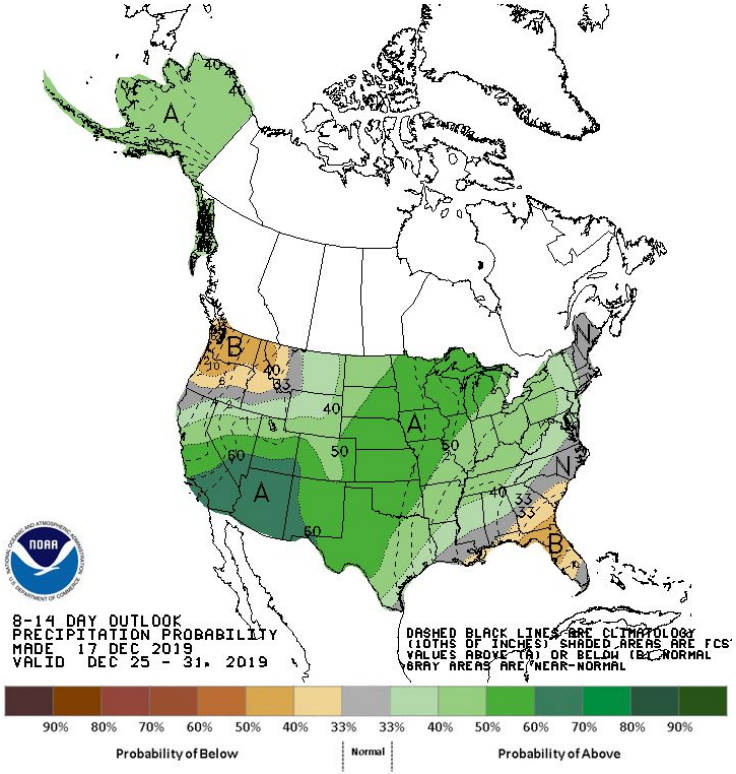
Upcoming Weather: December 23-26

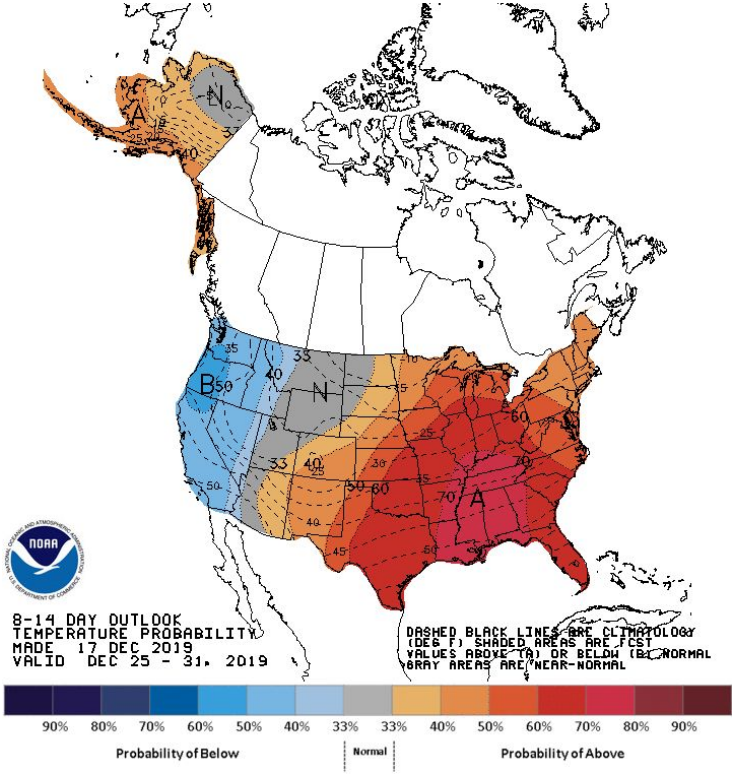
Weather models in agreement with timing & position of storm system next week.
1-3 inches storm total over Arizona higher terrain (snow levels ~8,000 ft).
Most basins expected to receive some precipitation.
Active weather expected to continue beyond event.



Upcoming Weather: 8-14 Day Outlook (December 25-31)

Increased probability of above average precipitation

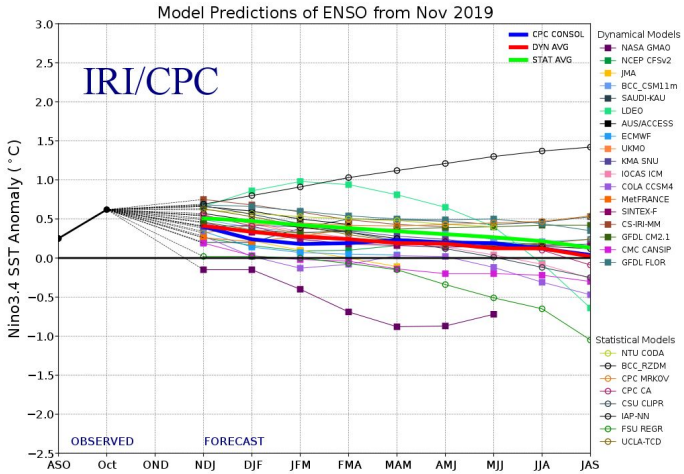




El Niño Southern Oscillation (ENSO)

Current Conditions: ENSO Neutral

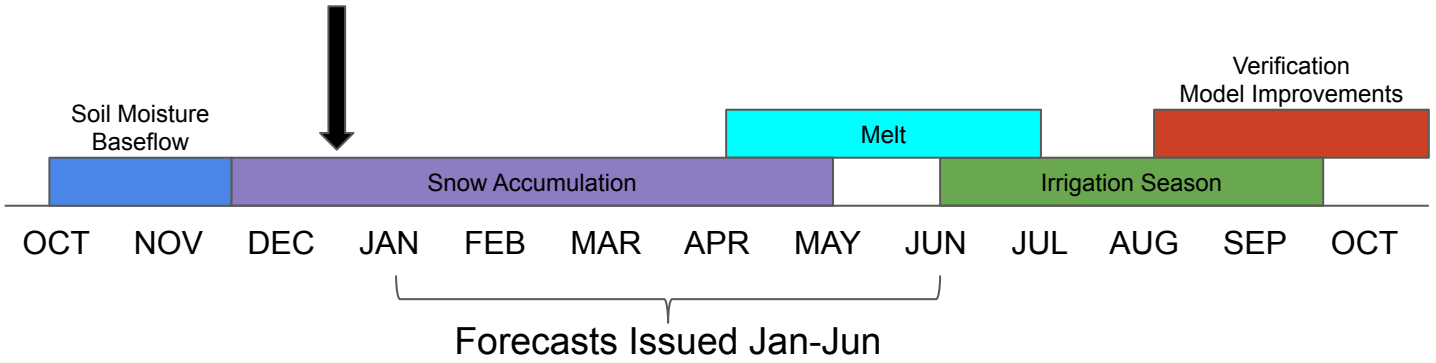
ENSO-neutral is favored during the Northern Hemisphere winter continuing through spring 2020.



IRI/CPC Mid-Month Model-Based ENSO Forecast Probabilities

Season	La Niña	Neutral	El Niño
NDJ 2019	0%	54%	46%
DJF 2020	1%	59%	40%
JFM 2019	2%	64%	34%
FMA 2019	2%	68%	30%
MAM 2020	2%	74%	24%
AMJ 2020	4%	70%	26%
MJJ 2020	12%	59%	29%
JJA 2020	18%	52%	30%
JAS 2020	23%	48%	29%

CBRFC Operational Timeline



- Water supply forecasts are issued starting in January; model guidance is now available on our website (forecast evolution plots).
- Currently, soil moisture states (also represented by baseflow) in the model have a larger influence on hydrologic guidance compared to later in the season.
- As we progress into the winter, snowpack conditions will have a larger impact on forecasts in the Upper Colorado and Great Basins.
- Winter rain events will have largest impacts on Lower Colorado River Basin forecasts.

2020 Water Supply Webinar Schedule

**All Times Mountain Time (MT)*

Colorado River Basin

Wednesday	Jan 8th	10 am
Friday	Feb 7th	10 am
Friday	Mar 6th	10 am
Tuesday	Apr 7th	10 am
Thursday	May 7th	10 am

Great Basin

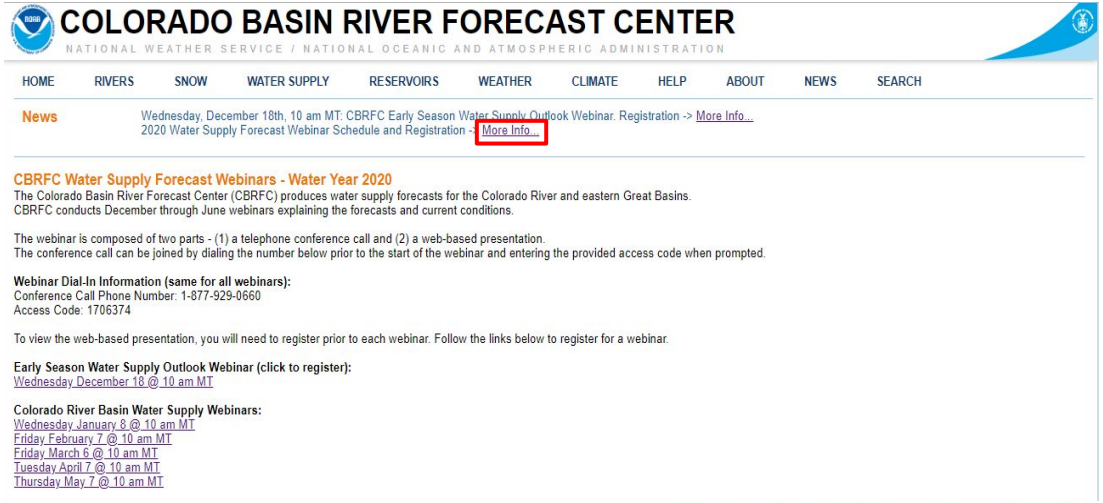
Wednesday	Jan 8th	11:30 am
Friday	Feb 7th	11:30 am
Friday	Mar 6th	11:30 am
Tuesday	Apr 7th	11:30 am
Thursday	May 7th	11:30 am

Peak flow forecast webinar Wednesday, March 18th, 10 am MT

Additional briefings scheduled as needed

All registration information has been posted to the CBRFC web page

CBRFC Webinar Registration & Email List



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2020 Water Supply Forecast Webinar Schedule and Registration -> More Info...

CBRFC Water Supply Forecast Webinars - Water Year 2020

The Colorado Basin River Forecast Center (CBRFC) produces water supply forecasts for the Colorado River and eastern Great Basins.
CBRFC conducts December through June webinars explaining the forecasts and current conditions.

The webinar is composed of two parts - (1) a telephone conference call and (2) a web-based presentation.
The conference call can be joined by dialing the number below prior to the start of the webinar and entering the provided access code when prompted.

Webinar Dial-In Information (same for all webinars):
Conference Call Phone Number: 1-877-929-0660
Access Code: 1706374

To view the web-based presentation, you will need to register prior to each webinar. Follow the links below to register for a webinar.

Early Season Water Supply Outlook Webinar (click to register):
Wednesday December 18 @ 10 am MT

Colorado River Basin Water Supply Webinars:
Wednesday January 8 @ 10 am MT
Friday February 7 @ 10 am MT
Friday March 6 @ 10 am MT
Tuesday April 7 @ 10 am MT
Thursday May 7 @ 10 am MT

Great Basin Water Supply Webinars:
Wednesday January 8 @ 11:30 am MT
Friday February 7 @ 11:30 am MT
Friday March 6 @ 11:30 am MT
Tuesday April 7 @ 11:30 am MT
Thursday May 7 @ 11:30 am MT

Peak Flow Webinar:
Wednesday March 18 @ 10 am MT

A notification email will be sent if a date or time change occurs. Additional webinars are scheduled as needed.
The webinar slides will be available from the CBRFC presentations page soon after each briefing.

https://www.cbrfc.noaa.gov/

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In the subject line please include: **email notification list**
If you would like to add any information about your area of interest and association or agency you represent please do so in the body of the email.
This information would help us maintain a more comprehensive contact list.

This list is used to provide notification when webinars are scheduled, water supply forecasts are updated, and for other news of interest to our stakeholders regarding CBRFC operations.

For questions or comments, including suggestions on additional CBRFC products or services we might provide, please contact us at cbrfc.webmasters@noaa.gov.

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Questions?