

April 18, 2023 Water Supply Forecast Discussion

The [Colorado Basin River Forecast Center \(CBRFC\)](#) geographic forecast area includes the Upper Colorado River Basin (UCRB), Lower Colorado River Basin (LCRB), and Eastern Great Basin (GB).

Water Supply Forecast Summary

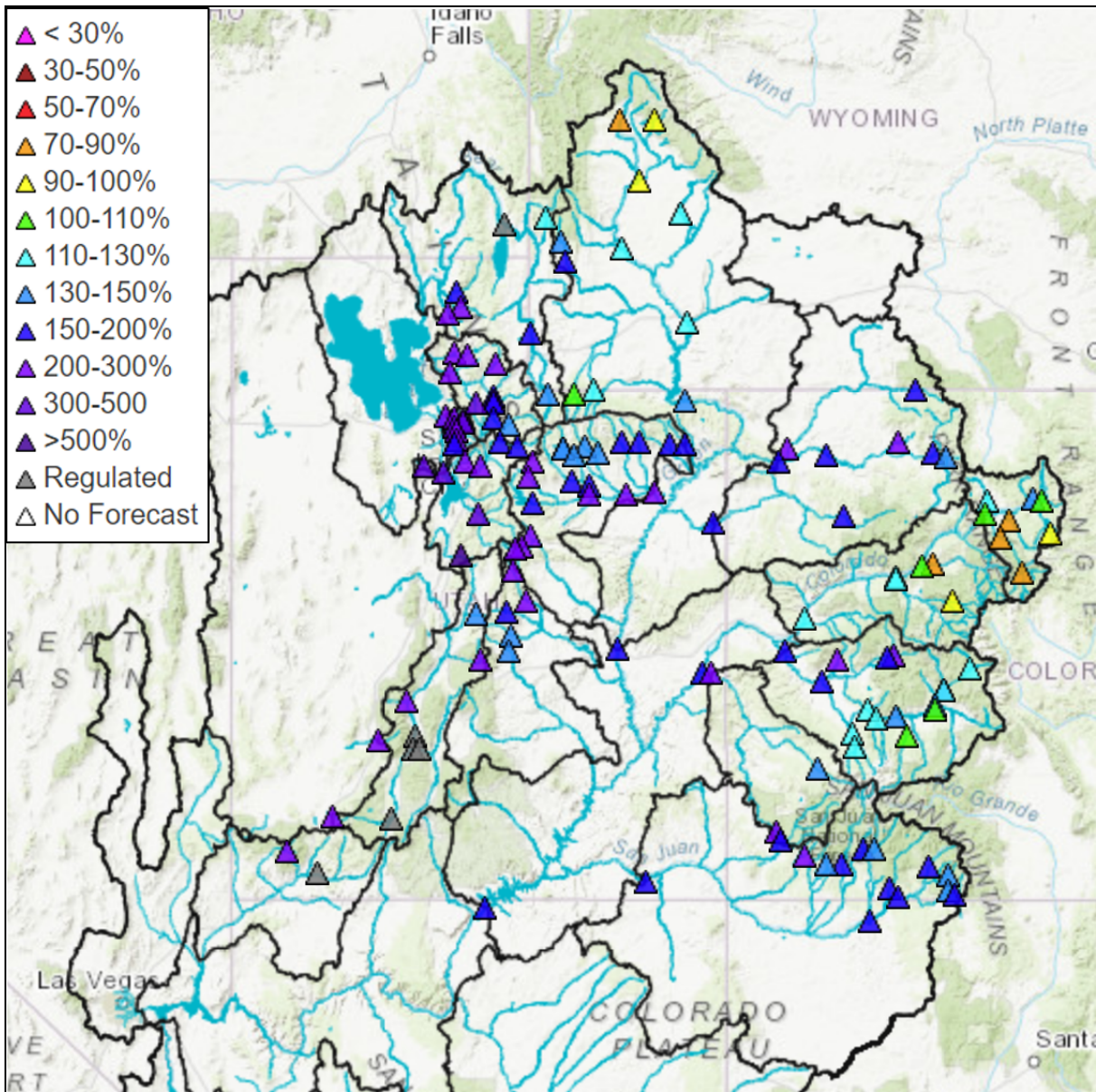
Cool and wet weather continued into the first week of April bringing additional snow accumulation across high elevations of UT, southwest WY, and northwest CO. Warmer and drier weather during the second week of April led to significant snowmelt and elevated flows across the CRB and GB. Cooler and wetter weather returned to the region for a few days around the middle of the month (April 14-16), which slowed snowmelt and brought some additional precipitation to west-central CO. Precipitation through the first half of April was generally near to slightly above average across the GB and slightly to well below average across the UCRB. April weather across the LCRB has been much drier than normal, with precipitation generally less than 30% of average across AZ and southwest UT during the first half of the month.

Snowmelt during the second week of April was significant given the extensive low elevation snowpack this year. Snowmelt during April has occurred up to around 11,000 feet in southwest CO based on SNOTEL data, but melt amounts at 11,000 feet and higher have been minimal thus far. Mid-April SWE across much of the UCRB is ranked in the wettest five in the 35+ year SNOTEL record, which is at or above the 85th percentile. Around ten SNOTEL stations across the UCRB have record mid-April SWE. Mid-April SWE conditions are ranked in the top three and above the 95th percentile across the Virgin River Basin in southwest UT as well as the majority of SNOTEL stations in the GB, with around 20 stations in UT reporting record mid-April SWE.

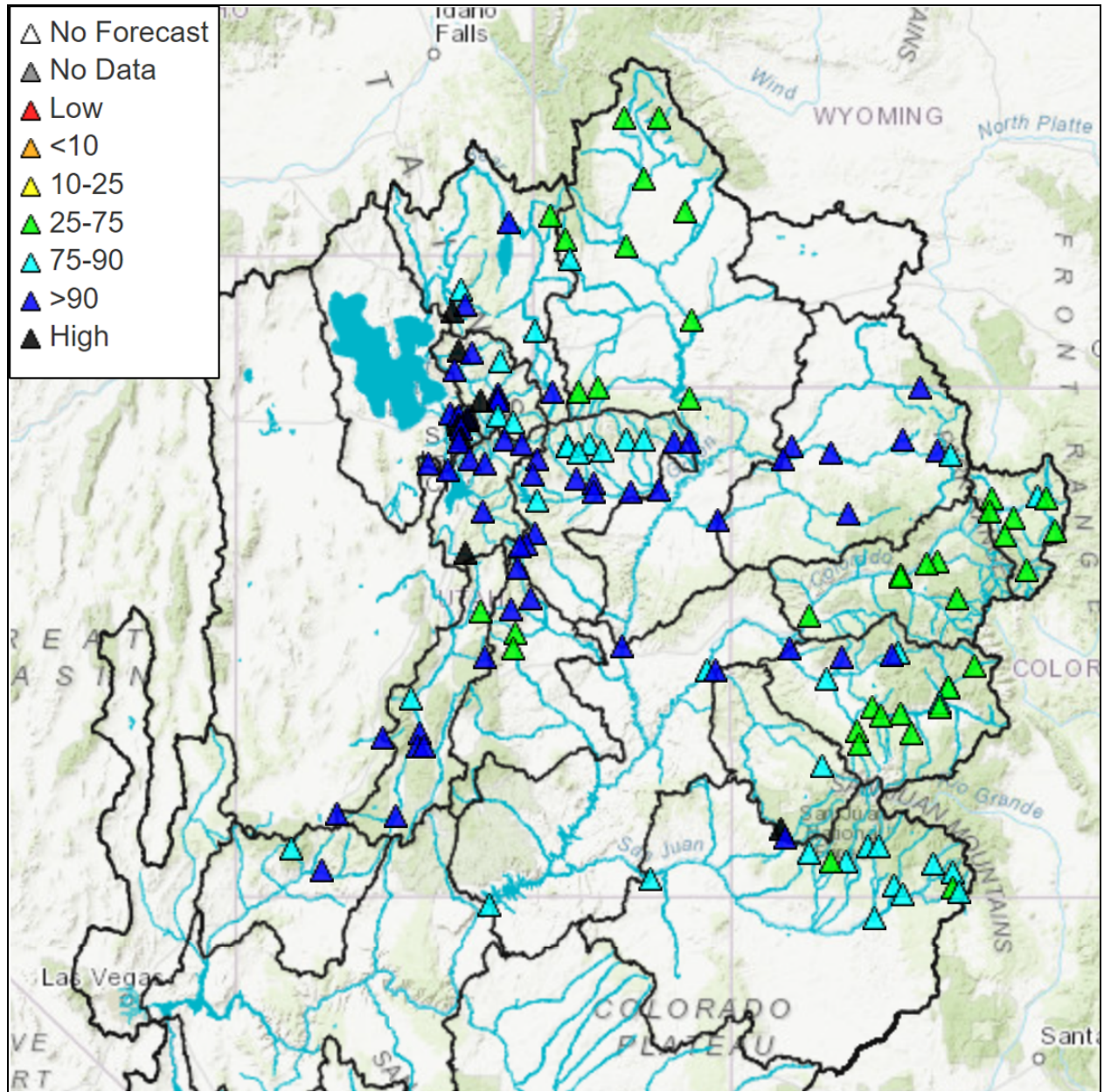
An upper level trough is moving into the Western US, and will bring a change to the weather across the area. The passage of a cold front associated with this trough will drop temperatures behind it to around 10 degrees below normal, and temperatures will remain below average across the region through Friday. Due to the timing of the cold front, the GB will see below average temperatures starting Tuesday April 18, while most of CO will have one more day of above average temperatures before the cold front clears the area Wednesday morning. In addition to a drop in temperatures to below seasonal normals, the trough will bring precipitation to the GB and UCRB through Friday. Precipitation totals are expected to be around 0.75" for high elevations in northern UT, WY, and north-central CO, while the LCRB will remain dry. Another ridge builds over the region this weekend, bringing dry conditions and a warming trend. Temperatures will return to near normal by the end of the weekend, and will be back above average for the first part of next week.

Water Supply Forecast Guidance

Note: Official water supply forecasts for mid-month forecast locations will be issued by Friday, April 21.



April-July runoff volume guidance as of April 17, 2023 (percent of 1991-2020 average).



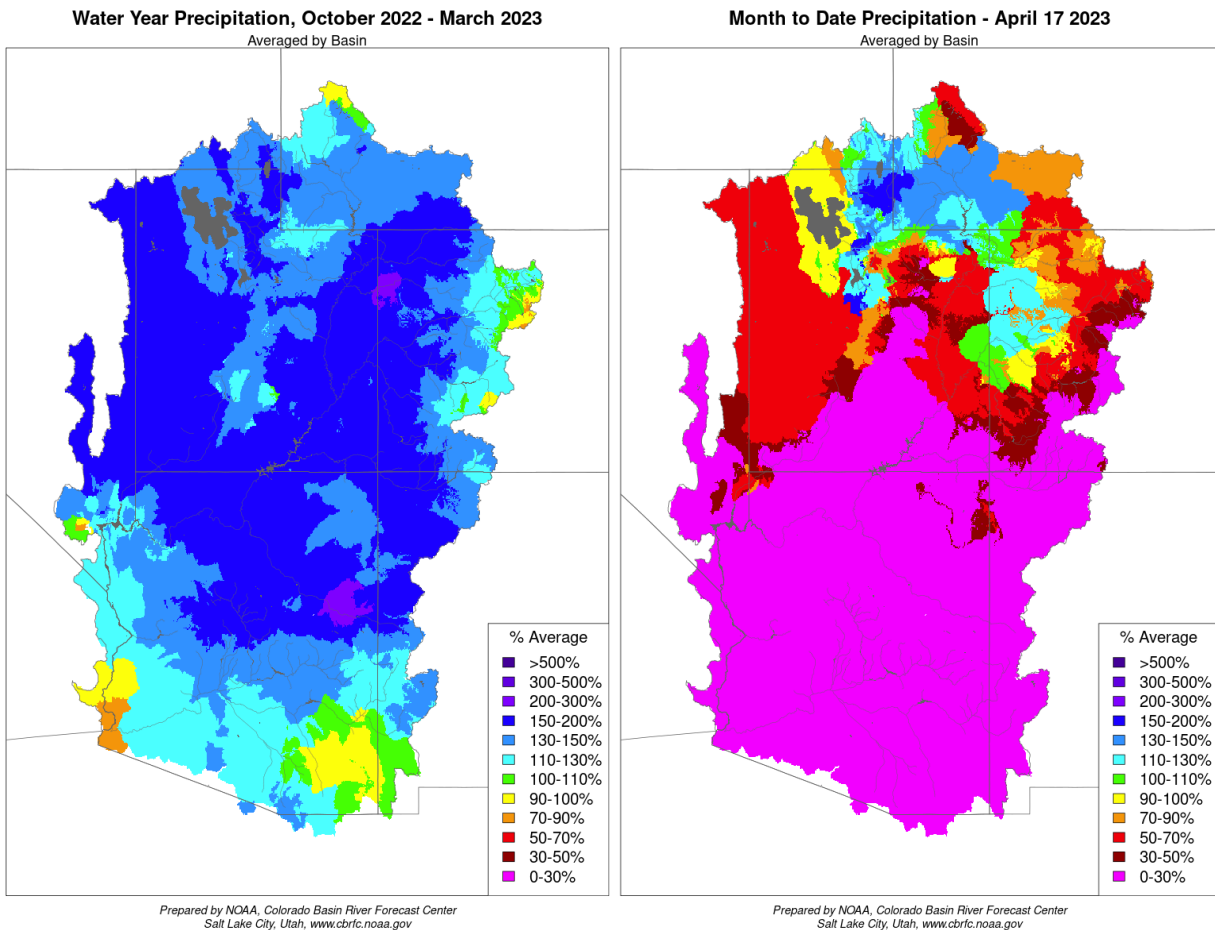
April-July runoff volume guidance as of April 17, 2023 (historical percentile).

For specific site water supply forecasts click [here](#).

Water Supply Discussion

April Weather

Cool and wet weather continued into the first week of April bringing additional snow accumulation across high elevations of UT, southwest WY, and northwest CO. Largest precipitation amounts during the first week of April were observed in portions of the GB including the Provo/UT Lake, Weber, and Bear River Basins (2-4 inches) and the Upper Green River Basin (1-3 inches). Warmer and drier weather during the second week of April led to significant snowmelt and elevated flows across the CRB and GB. Cooler and wetter weather returned to the region for a few days around the middle of the month (April 14-16), which slowed snowmelt and brought some additional precipitation to west-central CO. Precipitation through the first half of April was generally near to slightly above average across the GB and slightly below to well below average across the UCRB. April weather across the LCRB has been much drier than normal, with precipitation generally less than 30% of average across AZ and southwest UT during the first half of the month. Precipitation is summarized in the figures and table below.



October-March (left) and April 1-16 (right) percent of average precipitation.

For CBRFC seasonal precipitation maps click [here](#).

For CBRFC monthly precipitation maps click [here](#).

Water Year 2023 CBRFC Precipitation (Significant Runoff Areas) Percent of 1991-2020 Average		
UPPER COLORADO RIVER BASIN		
	<u>Oct-Mar</u>	<u>Apr1-Apr16</u>
Above Lake Powell	130	53
Green River Basin		
Above Fontenelle	105	73
Above Flaming Gorge	114	89
Yampa/White	135	75
Duchesne	139	75
Price/San Rafael/Dirty Devil	148	64
Colorado River Headwaters		
Above Kremmling	100	46
Eagle	106	27
Roaring Fork	124	39
Above Cameo	113	46
Southwest Colorado		
Gunnison	130	42
Dolores	148	46
San Juan	141	23
LOWER COLORADO RIVER BASIN		
Virgin	169	34
Little Colorado	156	1
Verde	169	0
Salt	137	1
Upper Gila	125	0
GREAT BASIN		
Bear	137	127
Weber	148	112
Six Creeks	161	123
Provo/Utah Lake	158	110
Sevier	149	40

Snowpack

High elevation snow water equivalent (SWE) conditions as a percent of normal generally trended with precipitation during the first half April - basins that received near to above average precipitation saw modest increases in snowpack conditions while basins that received below average precipitation had decreases in percent of normal snowpack conditions. Snowmelt during the second week of April was significant given the extensive low elevation snowpack this year. Snowmelt during April has occurred up to around 11,000 feet in southwest CO based on SNOTEL data, but melt amounts at 11,000 feet and higher have been minimal thus far.

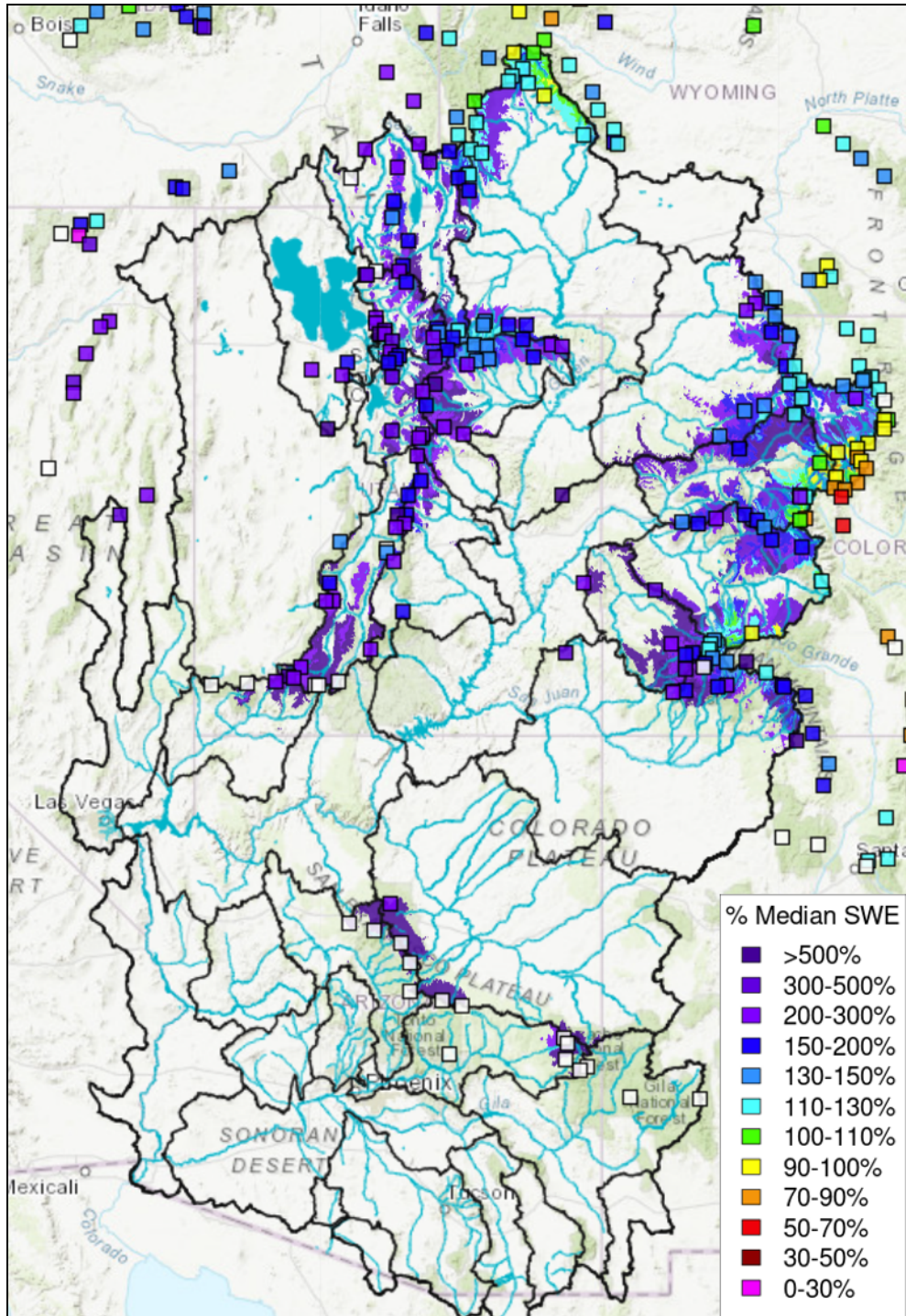
Mid-April SWE across much of the UCRB ranks in the wettest five in the 35+ year SNOTEL record, which is at or above the 85th percentile. Around ten SNOTEL stations across the UCRB have record mid-April SWE - this includes stations in the Sierra Madre Range (White/Yampa River Basins), the Gunnison River Basin and the San Juan Mountain Range in southwest CO (Dolores, San Juan River Basins), as well as portions of the UCRB within UT (Duchesne, Price, San Rafael River Basins). Mid-April SWE is less favorable, although still near normal, in the Upper Green River Basin above Fontenelle Reservoir and along Colorado's Western Slope extending from the Fraser River Basin to the headwaters of the Roaring Fork.

LCRB mid-April SWE conditions are highly variable, which is not unusual. SWE in the Virgin River Basin in southwest UT is ranked in the wettest three on record and above the 95th percentile, with SWE amounts generally ranging between 15-50 inches. Across central AZ, SWE at most SNOTEL stations is near melt out (zero), with these stations seeing around 10-15 inches of snowmelt during the first half of April. However, there are a couple stations in central AZ above 7,500 feet still reporting SWE amounts between 20-30 inches.

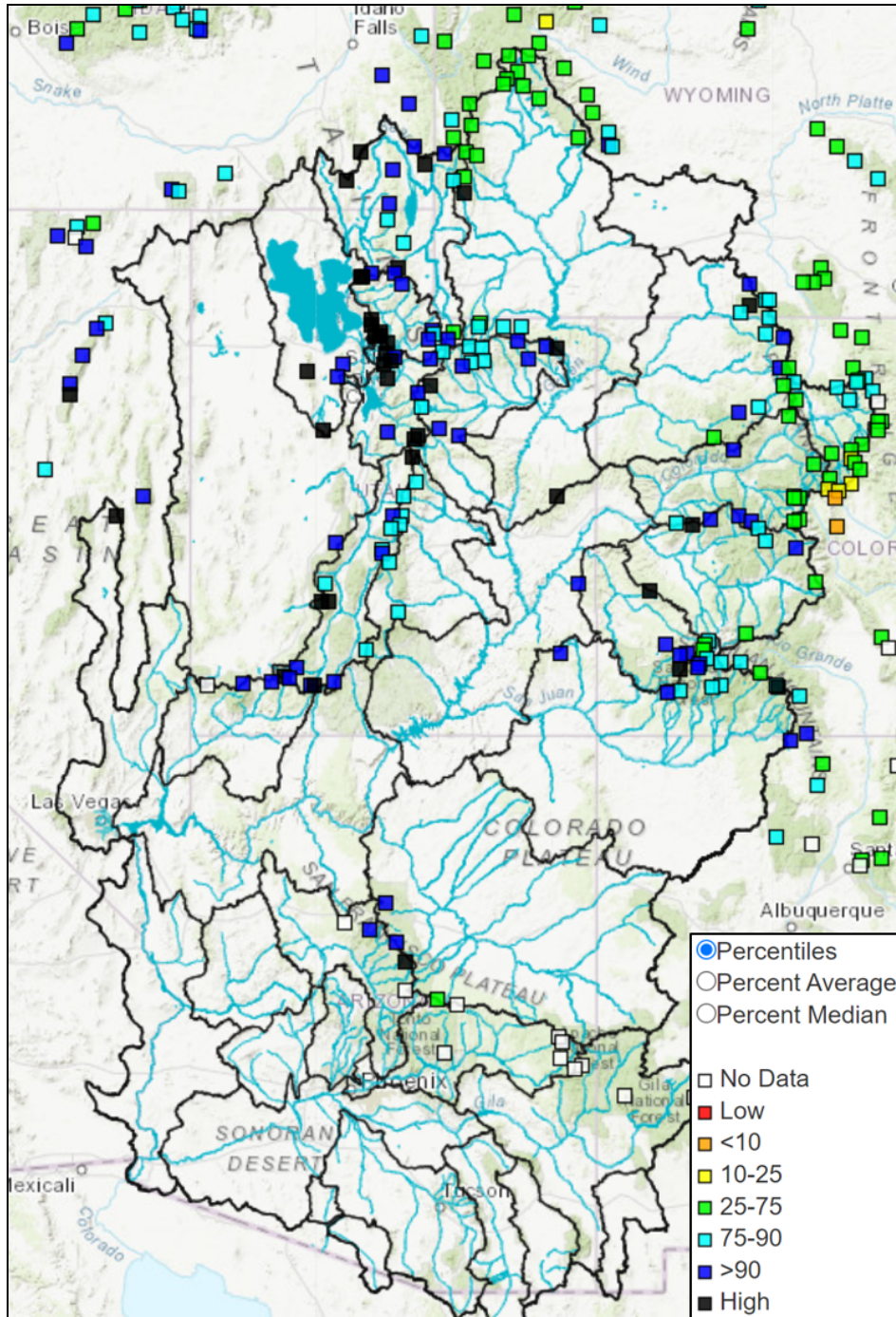
SWE conditions in the GB are generally better when compared to the UCRB, as more storms and precipitation events have targeted UT this winter compared to southwest WY, and western CO. Mid-April SWE at the majority of SNOTEL stations in the GB is ranked in the wettest three on record and above the 95th percentile, with around 15 stations reporting record mid-April SWE.

SWE conditions are summarized in the table and figures below.

Water Year 2023			
CBRFC Model SWE (Significant Runoff Areas)			
Percent of 1991-2020 Median			
UPPER COLORADO RIVER BASIN			
	Apr1	Apr16	Change
Above Lake Powell	169	164	-5
Green River Basin			
Above Fontenelle	114	121	7
Above Flaming Gorge	131	136	5
Yampa/White	175	179	4
Duchesne	199	194	-5
Price/San Rafael/Dirty Devil	247	252	5
Colorado River Headwaters			
Above Kremmling	124	115	-9
Eagle	119	107	-12
Roaring Fork	142	132	-10
Above Cameo	136	127	-9
Southwest Colorado			
Gunnison	167	162	-5
Dolores	238	248	10
San Juan	186	171	-15
GREAT BASIN			
Bear	175	208	33
Weber	221	246	25
Six Creeks	229	247	18
Provo/Utah Lake	252	286	34
Sevier	223	237	14



April 16 percent median SWE -
 NRCS SNOTEL observed (squares) and CBRFC hydrologic model significant runoff areas.



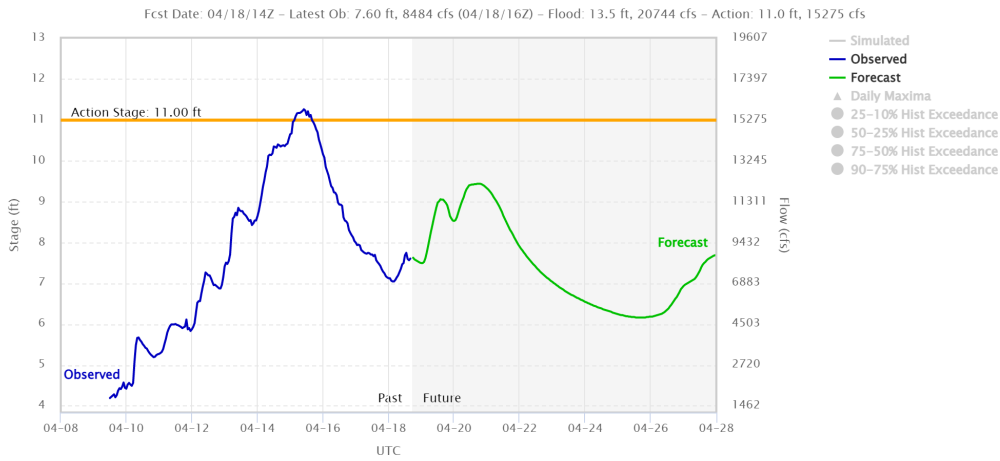
April 16, 2023 SNOTEL station SWE percentiles.

For updated SNOTEL information refer to click [here](#).

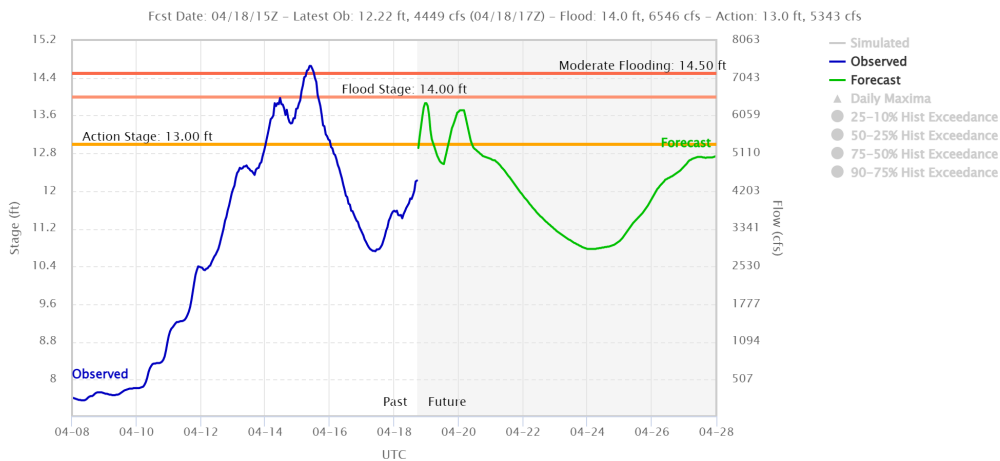
For CBRFC hydrologic model snow click [here](#).

Shown below are hydrographs at a few locations that experienced elevated flows due to rapid snowmelt during the first half of April.

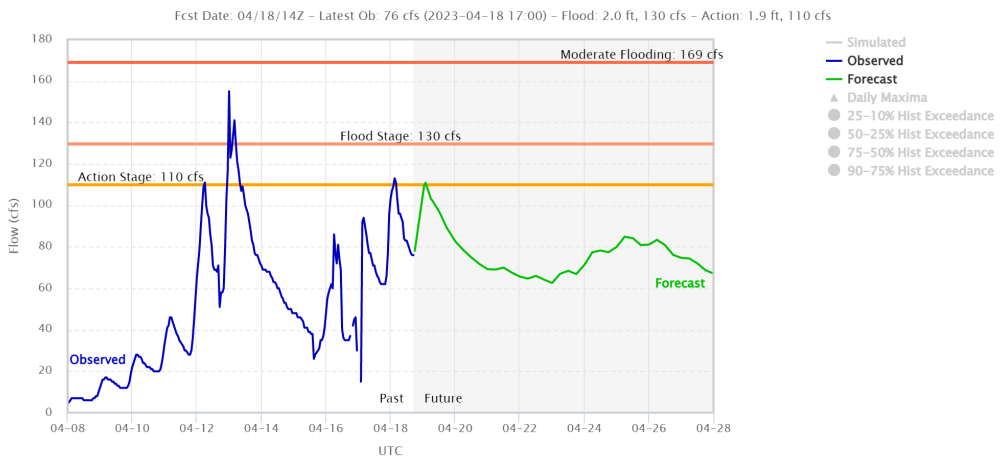
Forecast Hydrograph – Yampa – Deerlodge Park (YDLC2) – NOAA/CBRFC



Forecast Hydrograph – Dolores – Cisco, Nr (DOLU1) – NOAA/CBRFC



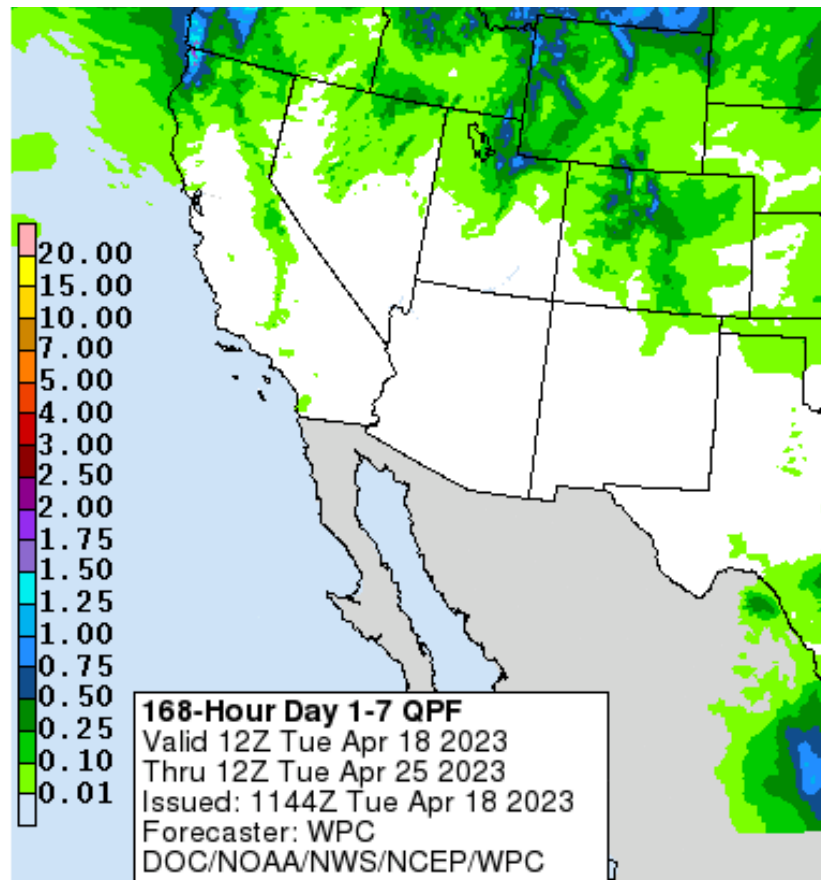
Forecast Hydrograph – Emigration Ck – Salt Lake City, Nr (EMIU1) – NOAA/CBRFC



Upcoming Weather

An upper level trough is moving into the Western US, and will bring a change to the weather across the area as it slowly moves along the Canadian border during the week. The passage of a cold front associated with this trough will drop temperatures behind it to around 10 degrees below normal, and temperatures will remain below average across the region through Friday. Due to the timing of the cold front, the GB will see below average temperatures starting Tuesday April 18, while most of CO will have one more day of above average temperatures before the cold front clears the area Wednesday morning. In addition to a drop in temperatures to below seasonal normals, the trough will bring precipitation to the GB and UCRB through Friday. Precipitation totals are expected to be around 0.75" for high elevations in northern UT, WY, and north-central CO. There is a 75% chance of these high elevation locations exceeding 0.50", and a 25% chance of exceeding 1". Precipitation totals in southwest CO are only expected to be around 0.10", while the LCRB will remain dry.

Another ridge builds over the region this weekend, bringing dry conditions and a warming trend. Temperatures will return to near normal by the end of the weekend, and will be back above average for the first part of next week. Mid-week next week, weather model consensus diverges with the possible passage of another trough along the northern edge of the GB and UCRB. Roughly one third of model ensemble members favor a solution that would bring another round of precipitation to these regions, while the remaining members continue mostly dry conditions. For the end of April, the CPC highlights elevated odds of above average temperatures, with near average precipitation totals.



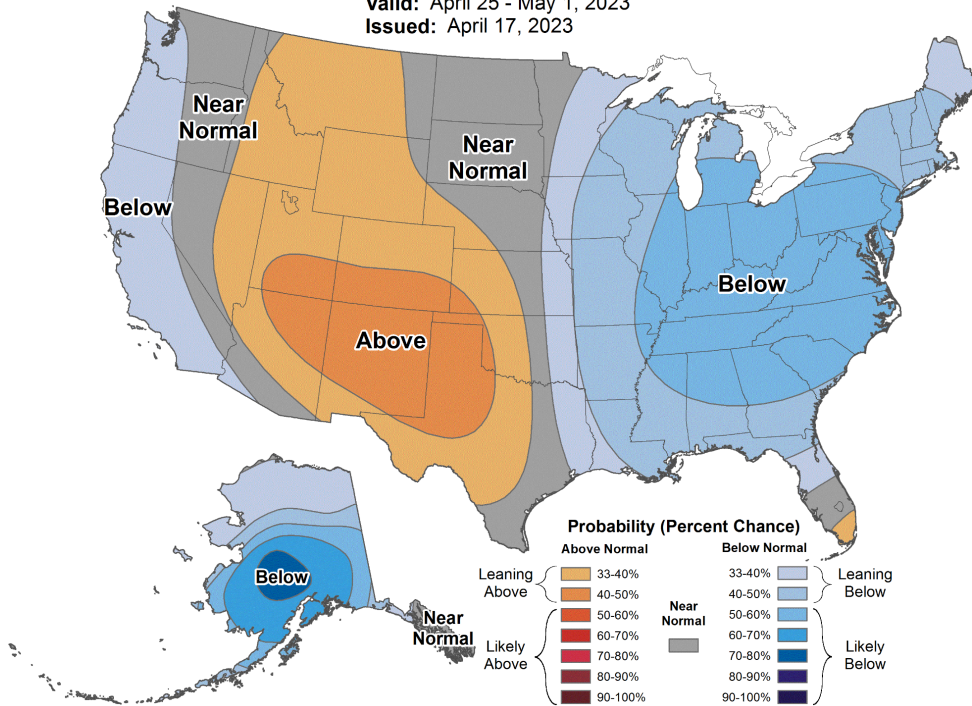
Weather Prediction Center precipitation forecast for April 18-25, 2023.



8-14 Day Temperature Outlook



Valid: April 25 - May 1, 2023
Issued: April 17, 2023



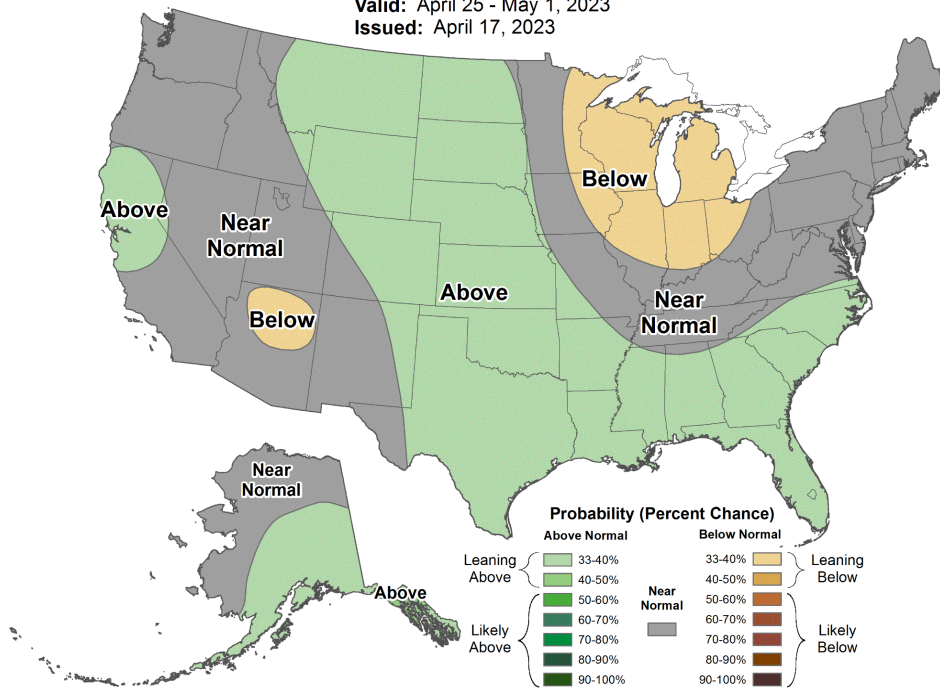
NWS Climate Prediction Center temperature probability forecast for April 25 - May 1, 2023.



8-14 Day Precipitation Outlook



Valid: April 25 - May 1, 2023
Issued: April 17, 2023



NWS Climate Prediction Center precipitation probability forecast for April 25 - May 1, 2023.

For CBRFC's beginning of the month online publication that contains basin conditions, summary graphics, and end of month reservoir content tables, refer to the following links.

Basin Conditions and Summary Graphics

[Green River Basin](#)

[Upper Colorado River Basin](#)

[San Juan River Basin](#)

[Great Salt Lake Basin](#)

[Sevier River Basin](#)

[Virgin River Basin](#)

End Of Month Reservoir Content Tables

[Green River Basin](#)

[Upper Colorado River Basin](#)

[San Juan River Basin](#)

[Great Salt Lake Basin](#)

[Sevier Basin](#)

Acronyms & Abbreviations

CBRFC - Colorado Basin River Forecast Center

CPC - Climate Prediction Center

CRB - Colorado River Basin

ENSO - El Niño/Southern Oscillation

ESP - Ensemble Streamflow Prediction

GB - Great Basin

KAF - Thousand Acre-Feet

LCRB - Lower Colorado River Basin

MAF - Million Acre-Feet

NWS - National Weather Service

QPF - Quantitative Precipitation Forecast

SNOTEL - Snow Telemetry

SWE - Snow Water Equivalent

UCRB - Upper Colorado River Basin

WPC - Weather Prediction Center