

May 1, 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

April weather across northern basins consisted of warm/dry periods that generated snowmelt and more active cool/wet periods that brought rain to lower elevations and snow to higher elevations. April weather across southern UT, southwest CO, and AZ was warmer and much drier. Monthly precipitation was below average across the majority of the region, with the exception of limited portions of northern UT, southwest WY, and west-central CO, where April precipitation was near to slightly above normal. April maximum temperatures were below average across the UCRB and GB, and near to slightly above normal across the LCRB.

Snowmelt during April's warm and sunny periods was significant given the extensive low elevation snowpack this year. Snowmelt has been minimal thus far above 11,000 feet. High elevation early May snow water equivalent (SWE) conditions are above the 85th percentile across much of the GB and portions of the UCRB.

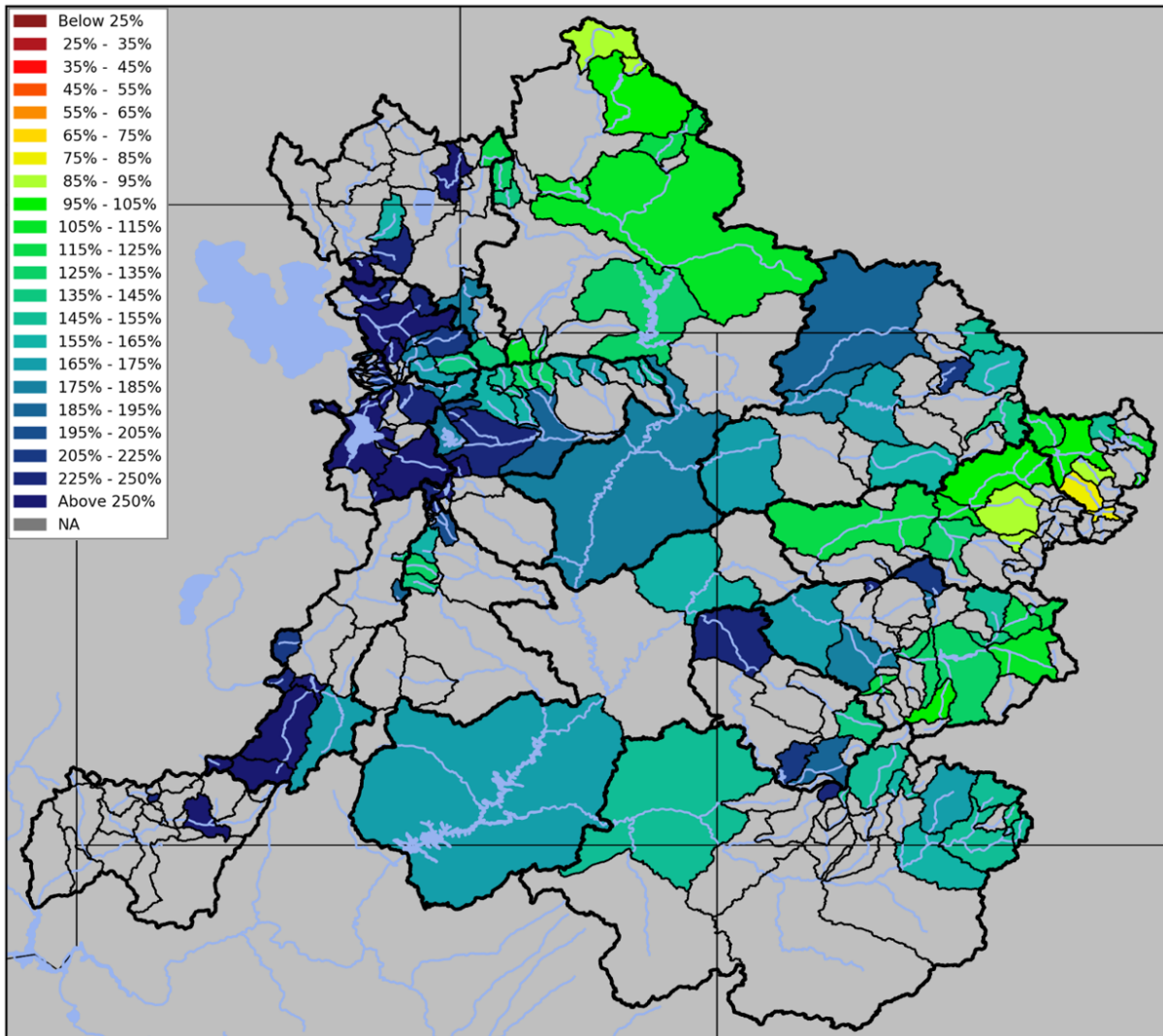
April-July unregulated inflow forecasts for some of the major reservoirs in the UCRB include Fontenelle 830 KAF (113% of average), Flaming Gorge 1300 KAF (135%), Green Mountain 235 KAF (84%), Blue Mesa 830 KAF (131%), McPhee 555 KAF (218%), and Navajo 1010 KAF (160%). The Lake Powell inflow forecast is 11.0 MAF (172% of average), which is a 300 KAF decrease from April.

A low pressure system will cross the area from southwest to northeast over the next few days bringing a sharp transition from above normal temperatures to below normal temperatures and will result in periods of precipitation across the northern half of the area. A cool, wet pattern will remain in place through early next week. Seven-day precipitation totals are expected to be around 0.75" to 1.25" in the higher elevations of UT and CO and in the 0.25-0.75" range across mid and lower elevations. Weather models diverge next week in regard to the overall weather pattern. The most likely scenario is that cool, unsettled weather will continue into next week. However, there is about a 30% chance that high pressure will develop next week which would lead to above normal temperatures and below normal precipitation.

Seasonal Water Supply Forecasts

May 1 water supply forecast ranges (percent of normal) by basin:

April-July Water Supply Forecast Ranges (%Average)	
UPPER COLORADO RIVER BASIN	
<u>Basin</u>	<u>Forecast Range</u>
Lake Powell	172
Green River Basin	
Upper Green	95-145
Duchesne	130-240
Yampa/White	135-210
Price/San Rafael/Dirty Devil	130-270
Colorado River Headwaters	
Above Kremmling	80-150
Kremmling to Cameo	85-130
Southwest Colorado	
Gunnison	105-245
Dolores	145-235
San Juan	140-240
GREAT BASIN	
Bear	125-280
Weber	135-310
Six Creeks	180-360
Provo/Utah Lake	170-345
Sevier	135-465



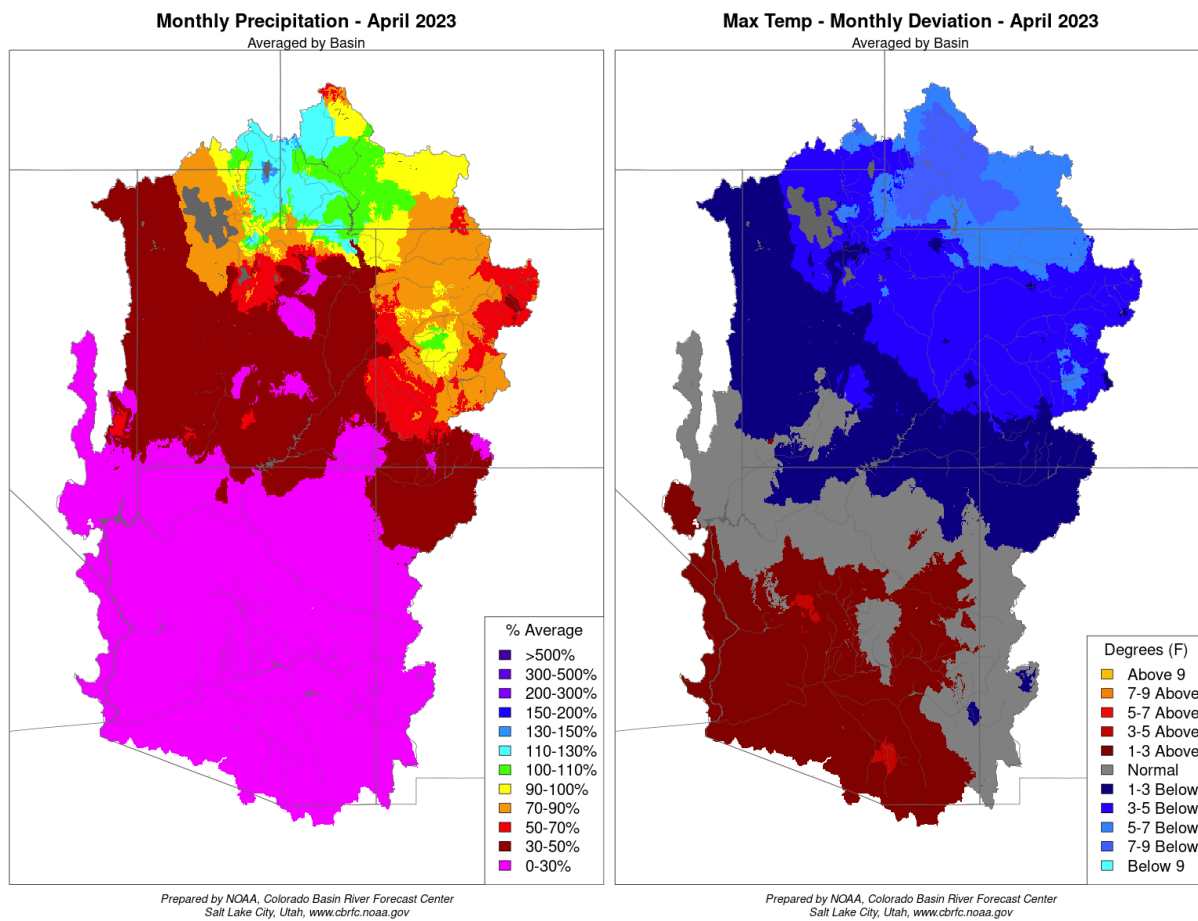
Upper Colorado, Great Basin, and Virgin River Basins
 2023 April-July forecast volumes as a percent of 1991-2020 average
 (50% exceedance probability forecast).

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

Water Supply Discussion

April Weather

April weather across northern basins consisted of warm/dry periods that generated snowmelt and more active cool/wet periods that brought rain to lower elevations and snow to higher elevations. April weather across southern UT, southwest CO, and AZ was warmer and much drier. The Four Corners area and AZ received little to no precipitation during April. Monthly precipitation was below average across the majority of the region, with the exception of limited portions of northern UT, southwest WY, and west-central CO, where April precipitation was near to slightly above normal. April maximum temperatures were below average across the UCRB and GB, and near to slightly above normal across the LCRB.



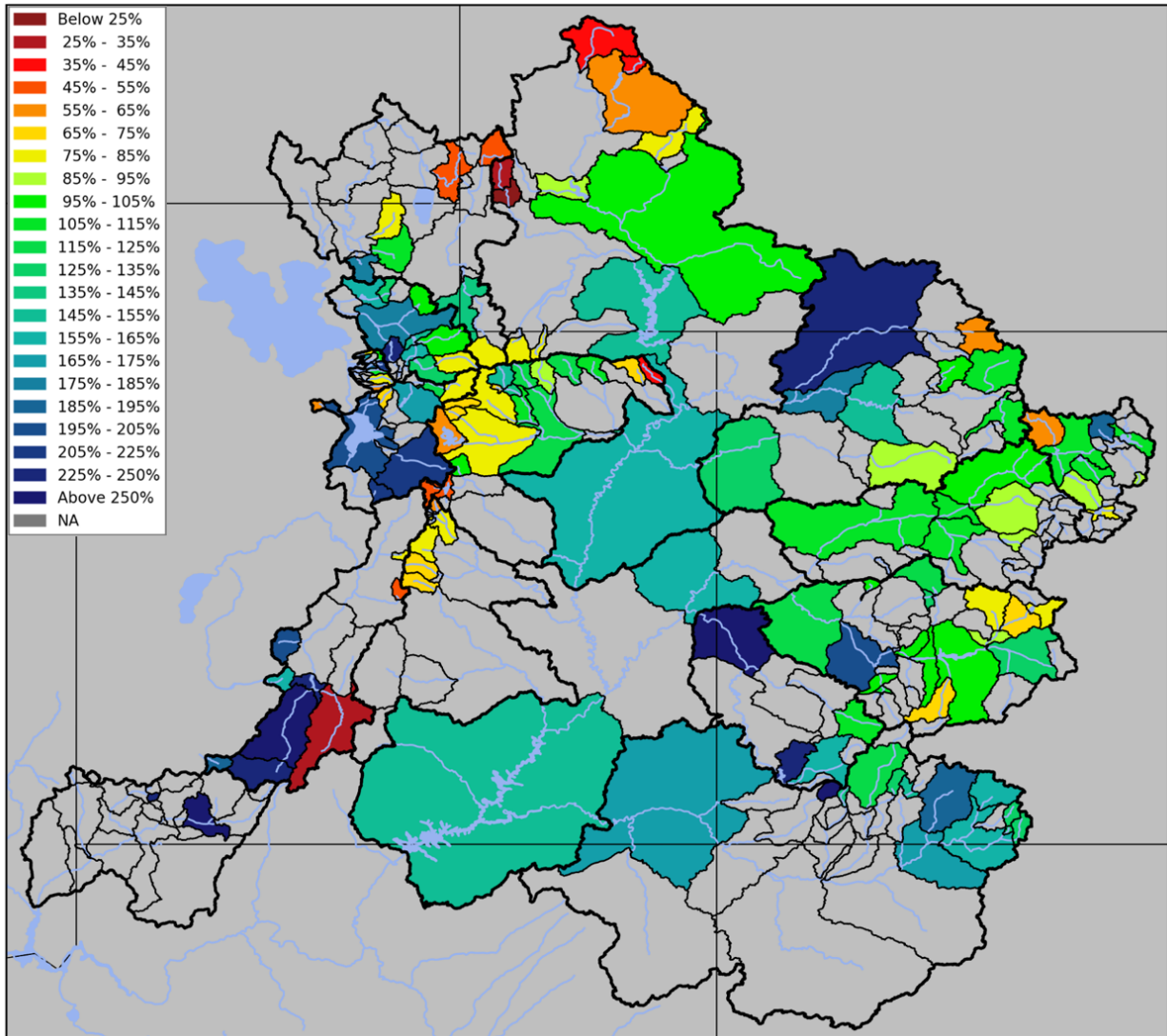
April 2023 percent of normal precipitation (left) and maximum temperature departure (right).
(Averaged by basins defined in the CBRFC hydrologic model)

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>Apr</u>	<u>Oct-Apr</u>
Above Lake Powell	68	121
Green River Basin		
Above Fontenelle	95	103
Above Flaming Gorge	99	112
Yampa/White	76	126
Duchesne	72	130
Price/San Rafael/Dirty Devil	41	134
Colorado River Headwaters		
Above Kremmling	61	93
Eagle	58	97
Roaring Fork	73	115
Above Cameo	66	105
Southwest Colorado		
Gunnison	76	123
Dolores	66	139
San Juan	38	127
LOWER COLORADO RIVER BASIN		
Virgin	33	158
Little Colorado	0	143
Verde	0	154
Salt	0	127
Upper Gila	0	116
GREAT BASIN		
Bear	113	134
Weber	96	141
Six Creeks	103	153
Provo/Utah Lake	75	148
Sevier	37	134

April Observed Streamflow

Observed unregulated streamflow volumes during April (image below) were variable across the UCRB and GB. Northern basins generally saw less snowmelt runoff during April due to periods of cooler and cloudier weather while southern basins experienced more snowmelt runoff as a result of warmer and sunnier weather. Notable areas with much above average (>200%) April flows include the Little Snake near the CO/WY border, the Dolores River Basin, as well as portions of central and southwest UT (Sevier and Virgin basins).

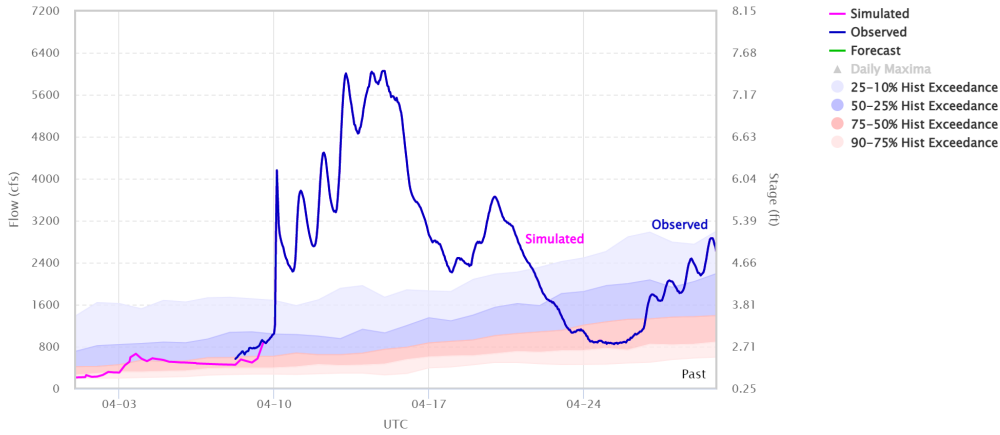


Upper Colorado, Great, Virgin River Basins
April 2023 observed unregulated volumes as a percent of the 1991-2020 average.

Shown below are April 1-30 hydrographs at a few locations where April flows were >200% of average.

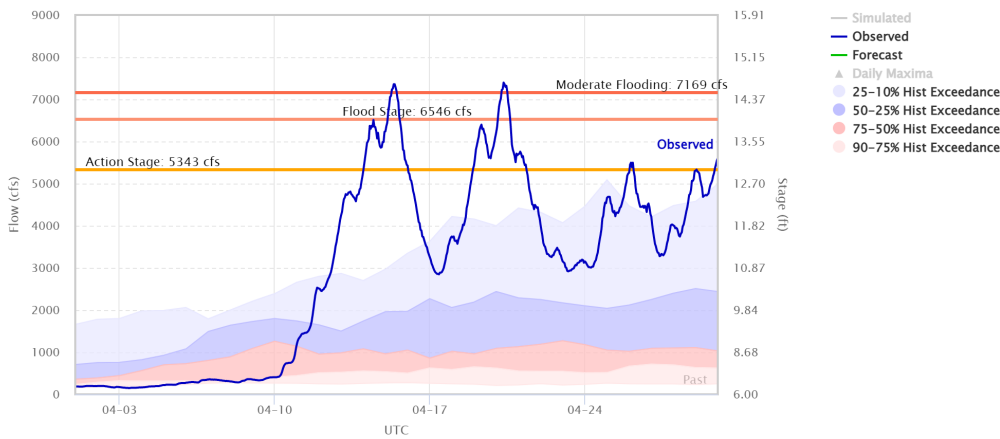
Forecast Hydrograph – Little Snake – Lily, Nr (LILC2) – NOAA/CBRFC

Fcst Date: 05/04/15Z – Latest Ob: 6.77 ft, 5004 cfs (05/04/16Z) – Flood: 12.0 ft, 15271 cfs – Action: 9.5 ft, 9701 cfs



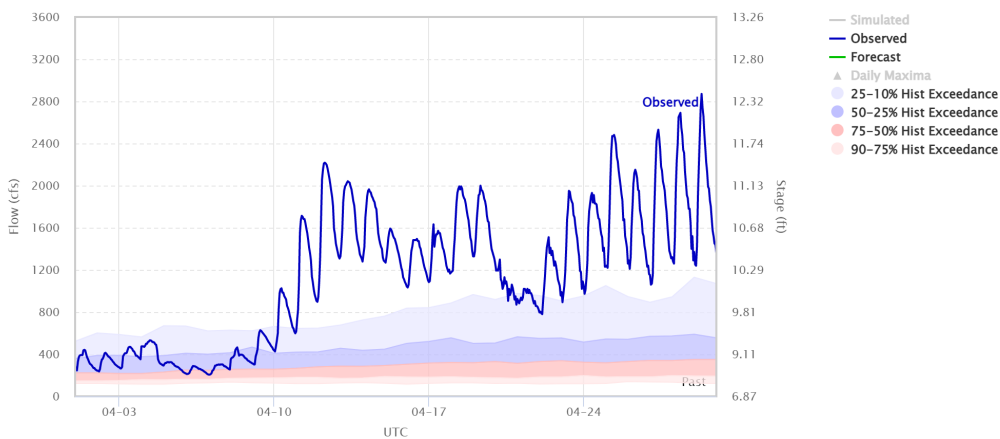
Forecast Hydrograph – Dolores – Cisco, Nr (DOLU1) – NOAA/CBRFC

Fcst Date: 05/04/15Z – Latest Ob: 14.27 ft, 6881 cfs (05/04/17Z) – Flood: 14.0 ft, 6546 cfs – Action: 13.0 ft, 5343 cfs



Forecast Hydrograph – Virgin – Virgin (VIRU1) – NOAA/CBRFC

Fcst Date: 05/04/17Z – Latest Ob: 10.67 ft, 1593 cfs (05/04/17Z) – Flood: 18.9 ft, 8647 cfs – Action: 17.0 ft, 6827 cfs



Snowpack

Snowmelt during April's warm and sunny periods was significant given the extensive low elevation snowpack this year. Snowmelt has been minimal thus far above 11,000 feet. The limited high elevation snowmelt during April sustained snowpack conditions, resulting in increases in percent normal SWE conditions, even though precipitation during April was below average across much of the region. High elevation early May snow water equivalent (SWE) conditions are above the 85th percentile across much of the GB and portions of the UCRB.

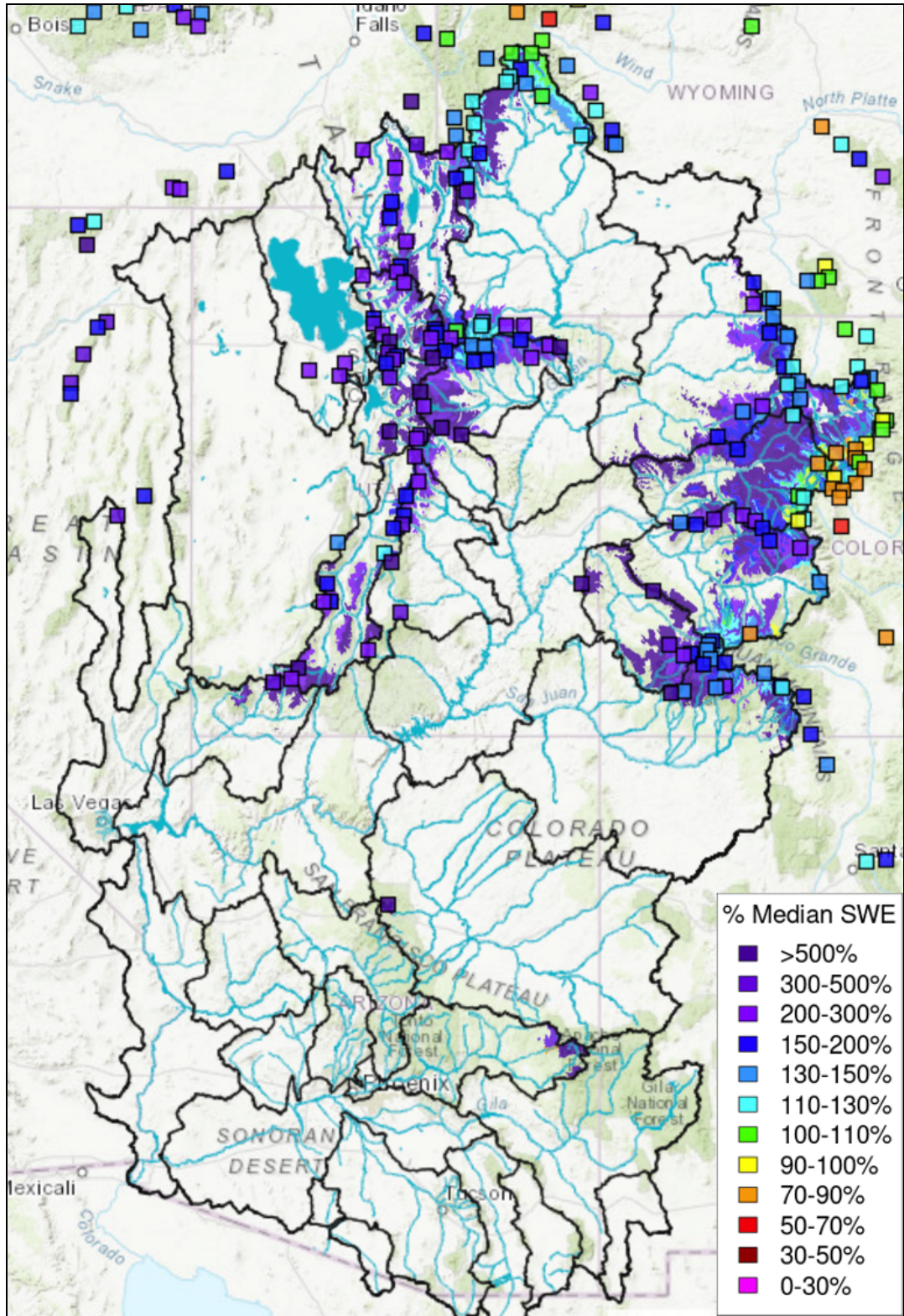
A handful of SNOTEL stations across the UCRB have record May 1 SWE - this includes the Sierra Madre Range (White/Yampa drainage), the Gunnison River Basin and the San Juan Mountain Range in southwest CO (Dolores, San Juan River Basins), as well as the Duchesne River Basin in northeast UT. Snowpack conditions are less favorable in the Upper Green River Basin above Fontenelle Reservoir (near to slightly above normal May 1 SWE), and along Colorado's Western Slope extending from the Fraser River Basin to the headwaters of the Roaring Fork (near to slightly below normal May 1 SWE).

LCRB early May SWE conditions are highly variable, which is not unusual. Across central AZ, SWE at most SNOTEL stations is near melt out (zero), with only a few stations still reporting snow. May 1 SWE in the Virgin River Basin in southwest UT is generally above the 85th percentile at SNOTEL stations that still have snow.

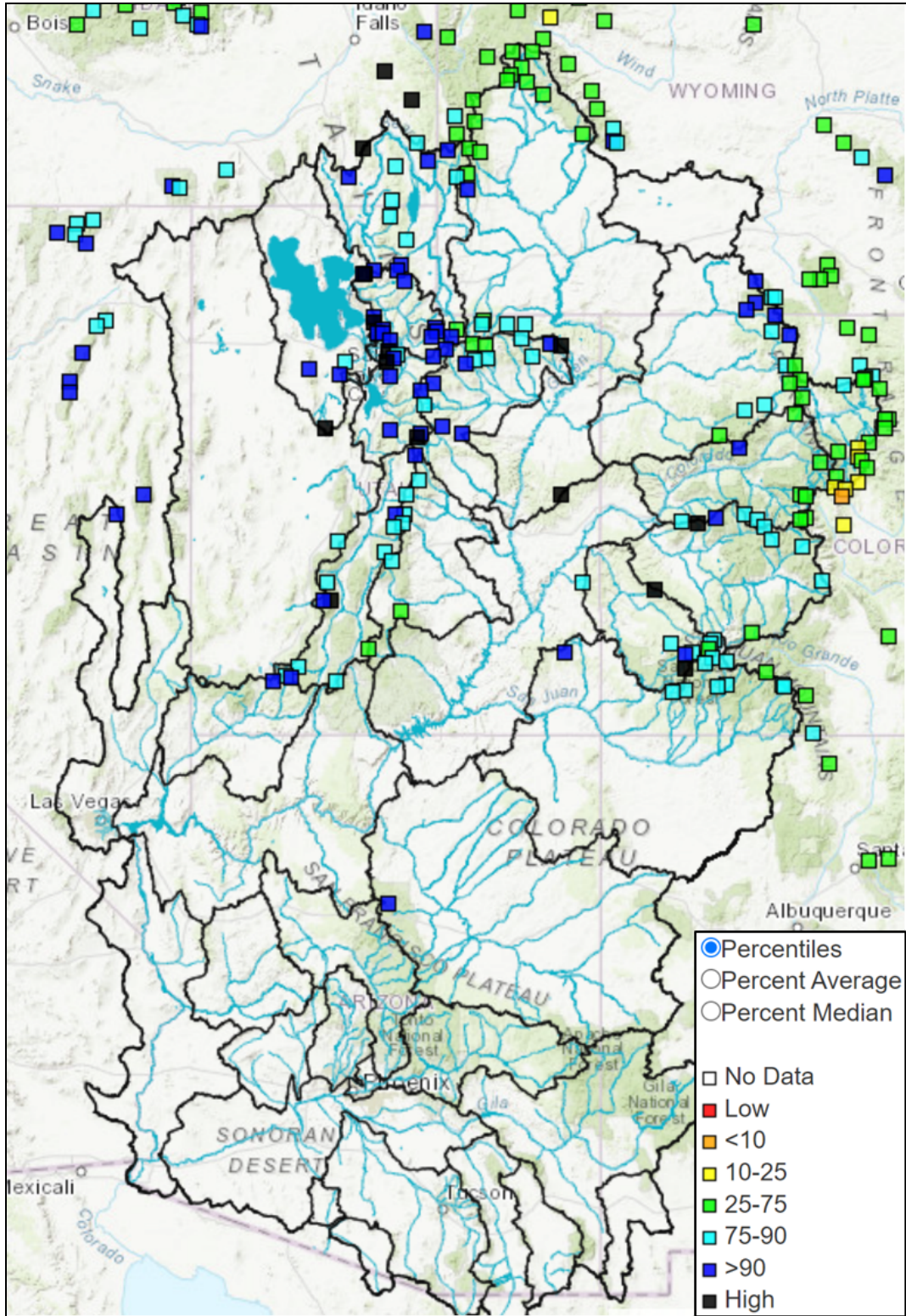
SWE conditions in the GB are generally better when compared to the UCRB, due to more storms and precipitation events targeting UT this winter compared to southwest WY, and western CO. May 1 SWE at the majority of SNOTEL stations in the GB is ranked in the wettest five on record and above the 90th percentile.

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	May1	Change
Above Lake Powell	169	163	-6
Green River Basin			
Above Fontenelle	114	129	15
Above Flaming Gorge	131	146	15
Yampa/White	175	180	5
Duchesne	199	205	6
Price/San Rafael/Dirty Devil	247	255	8
Colorado River Headwaters			
Above Kremmling	124	113	-11
Eagle	119	110	-9
Roaring Fork	142	137	-5
Above Cameo	136	129	-7
Southwest Colorado			
Gunnison	167	162	-5
Dolores	238	240	2
San Juan	186	155	-31
GREAT BASIN			
Bear	175	250	75
Weber	221	267	46
Six Creeks	229	275	46
Provo/Utah Lake	252	310	58
Sevier	223	225	2



May 1, 2023 percent median SWE -
 NRCS SNOTEL observed (squares) and CBRFC hydrologic model significant runoff areas.



May 1, 2023 SNOTEL station SWE percentiles.

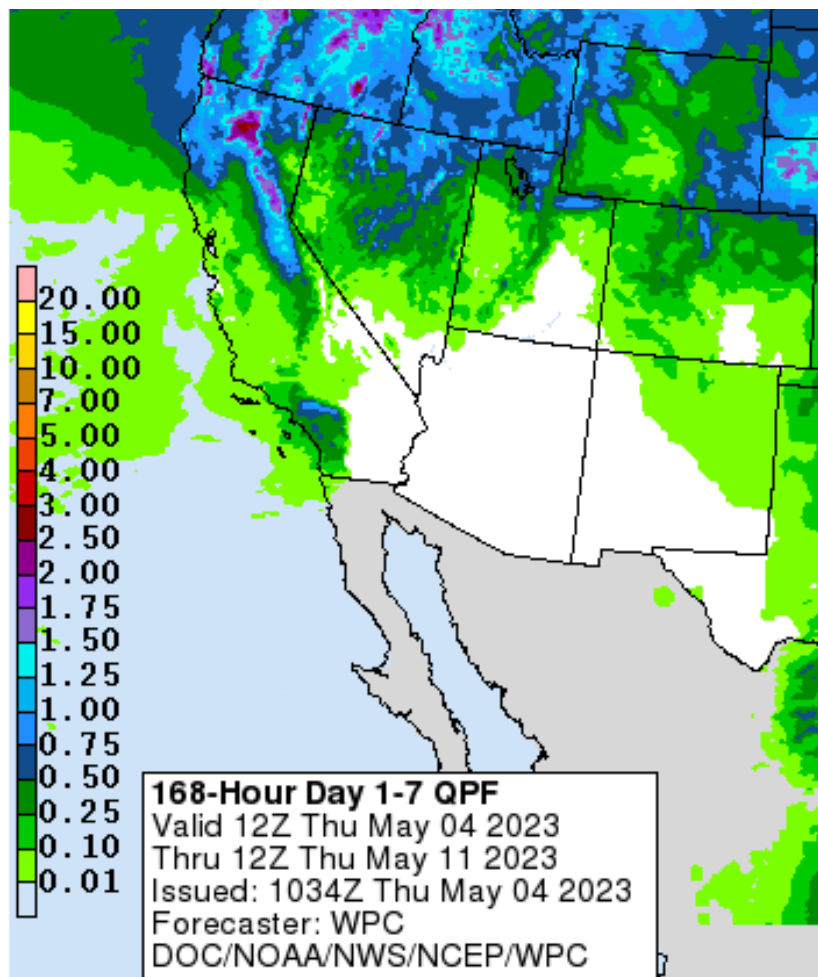
For updated SNOTEL information click [here](#).

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

Upcoming Weather

A low pressure system will cross the area from southwest to northeast over the next few days bringing a sharp transition from above normal temperatures to below normal temperatures and will result in periods of precipitation across the northern half of the area. A cool, wet pattern will remain in place through early next week. Seven-day precipitation totals are expected to be around 0.75" to 1.25" in the higher elevations of UT and CO and in the 0.25-0.75" range across mid and lower elevations. The first round of precipitation will be today (May 4) and will be associated with a cold front crossing the area. Precipitation totals will generally be less than 0.15" across northern UT and less than 0.20" across western CO. There is a 30% chance that northern Utah will see greater than 0.25" of precipitation and about a 40% chance that western CO will receive greater than 0.25" of precipitation. Snow levels will be around 6,500 feet in northern UT and around 7,500 feet in western CO.

Periods of precipitation will continue into early next week, with an additional 0.50"-0.75" of precipitation expected across UT and CO. Storm totals will be highest across northern Utah. Weather models diverge next week in regard to the overall weather pattern. The most likely scenario is that cool, unsettled weather will continue into next week. However, there is about a 30% chance that high pressure will develop next week which would lead to above normal temperatures and below normal precipitation.



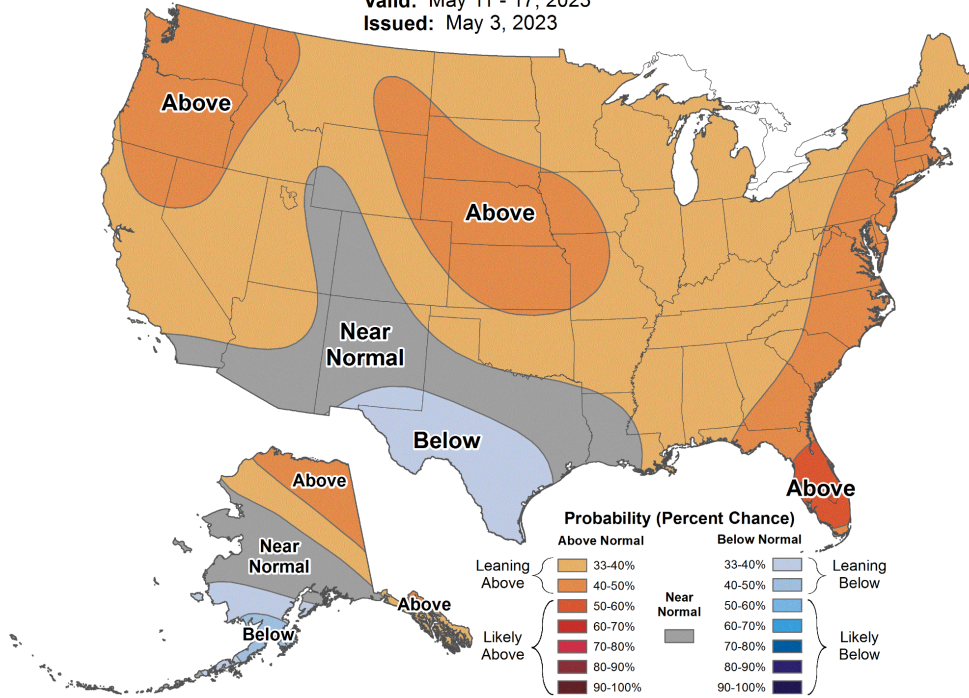
Weather Prediction Center precipitation forecast for May 4-11, 2023.



8-14 Day Temperature Outlook



Valid: May 11 - 17, 2023
Issued: May 3, 2023



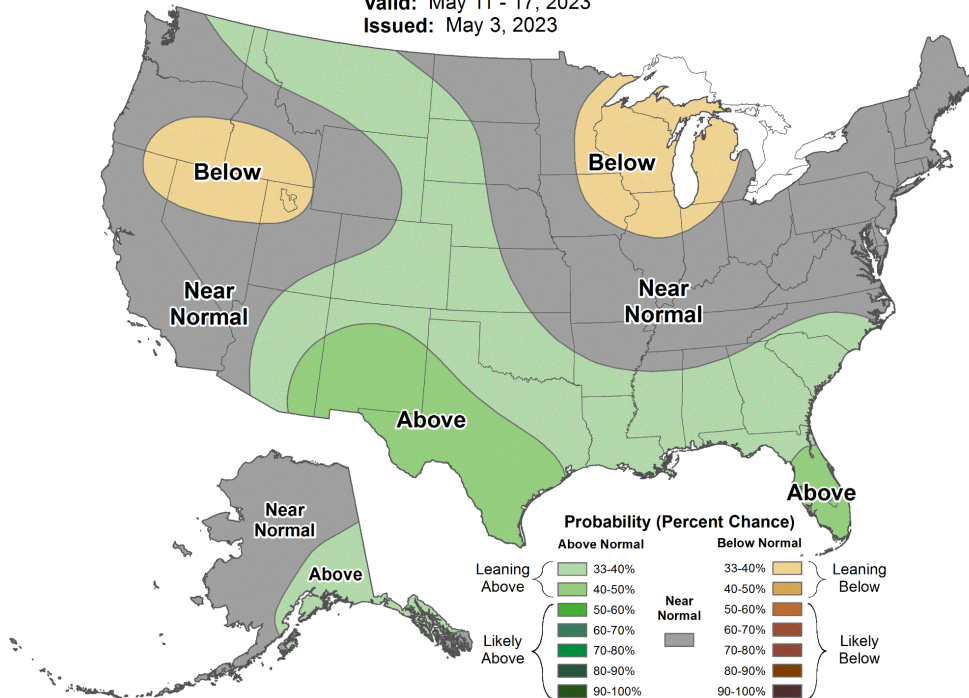
NWS Climate Prediction Center temperature probability forecast for May 11-17, 2023.



8-14 Day Precipitation Outlook



Valid: May 11 - 17, 2023
Issued: May 3, 2023



NWS Climate Prediction Center precipitation probability forecast for May 11-17, 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