

February 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

Following above average December precipitation, weather remained active across the region during much of January, with UT and AZ continuing to receive more precipitation than WY and CO. January precipitation along Colorado's Western Slope was generally above average, with more storms targeting northern (White, Yampa) and southern (Gunnison, Dolores, San Juan) basins. Central AZ received 5-10 inches of precipitation at most SNOTEL stations, which is around 200-275% of average, while east central AZ received 2-5 inches (~125-200% of average). In the GB, January precipitation was generally 150-225% of average. Around 10 SNOTEL stations along Utah's Wasatch Range received record precipitation amounts during January, with most stations receiving precipitation amounts above the 85th percentile.

February 1 CBRFC model snow water equivalent (SWE) conditions are above normal across the CRB and GB. Across the UCRB, SWE conditions during January improved in UT (Duchesne, Price, San Rafael, Dirty Devil basins) and southwest CO (Gunnison, Dolores, San Juan) while snowpack conditions as a percent of normal generally remained steady across southwest WY (Upper Green) and northwest CO (White, Yampa, Colorado River headwaters). February 1 SWE conditions across the LC are much above normal and exceeding expectations because La Niña conditions usually result in drier than average winter weather across the southwest US. Most SNOTEL stations in UT are reporting February 1 SWE amounts ranking in the top five of the station's record and above the 90th percentile, with around five stations reporting record February 1 SWE amounts.

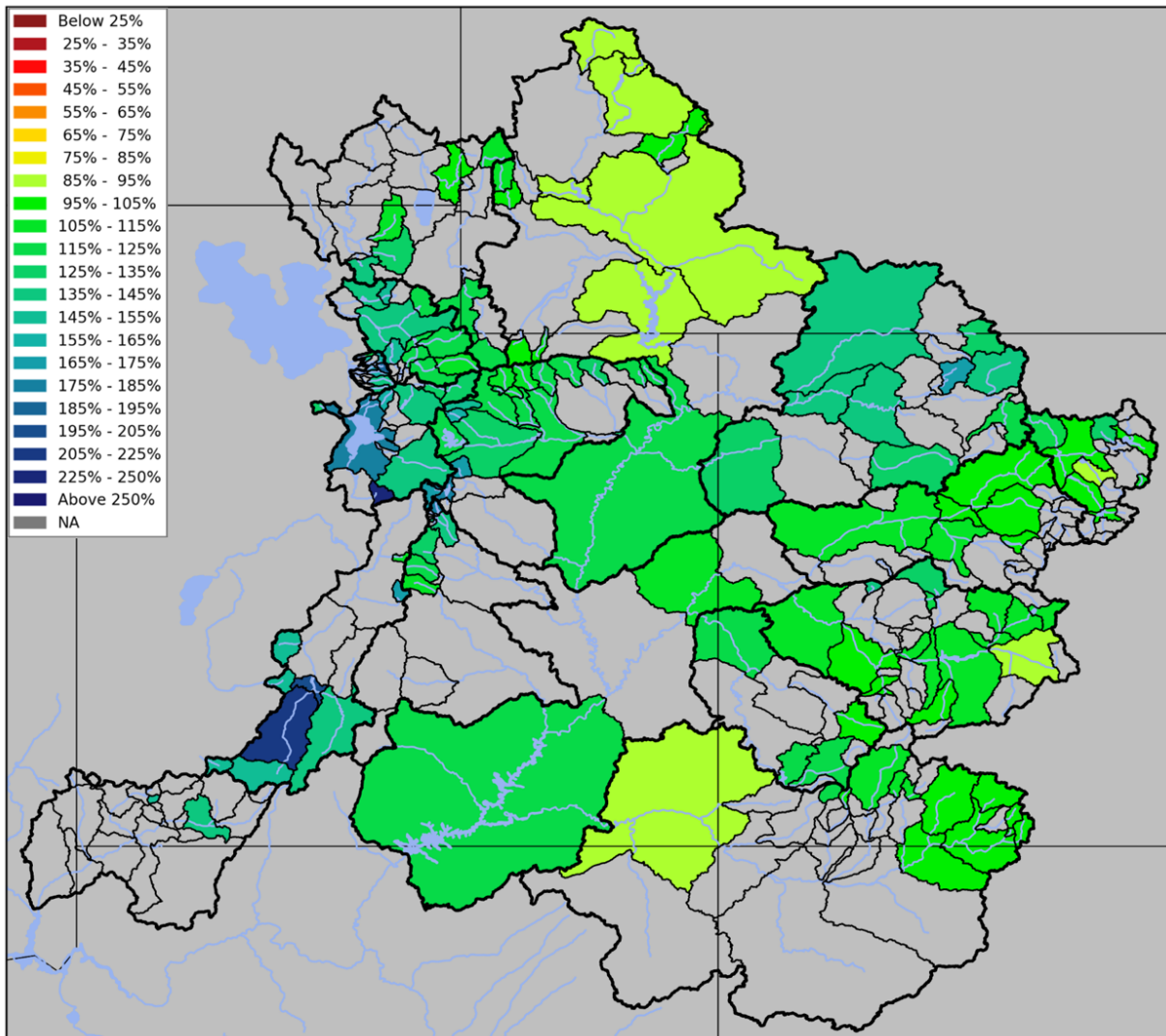
April-July unregulated inflow forecasts for some of the major reservoirs in the UCRB include Fontenelle 650 KAF (88% average), Flaming Gorge 880 KAF (91%), Green Mountain 270 KAF (96%), Blue Mesa 680 KAF (107%), McPhee 315 KAF (124%), and Navajo 620 KAF (98%). The Lake Powell inflow forecast is 7.5 MAF (117% of average), an 800 kaf increase from the January 1 forecast.

A weak and mostly dry storm system will cross northern UT today (Friday) into early Saturday, with little to no precipitation expected through Saturday. On Sunday, a storm system is expected to move through the GB and bring 0.25-0.75" of precipitation across Utah's Wasatch Range, with amounts generally less than 0.25" across western CO. Some lingering/light precipitation from this system is expected across the region Monday and Tuesday, with highest amounts (up to 0.25") expected across southwest CO. The 8-14 day (February 10-16) outlook from the Climate Prediction Center (CPC) is favoring a more active weather pattern returning across the western US, with increased chances of above normal precipitation and below normal temperatures across the CRB and GB.

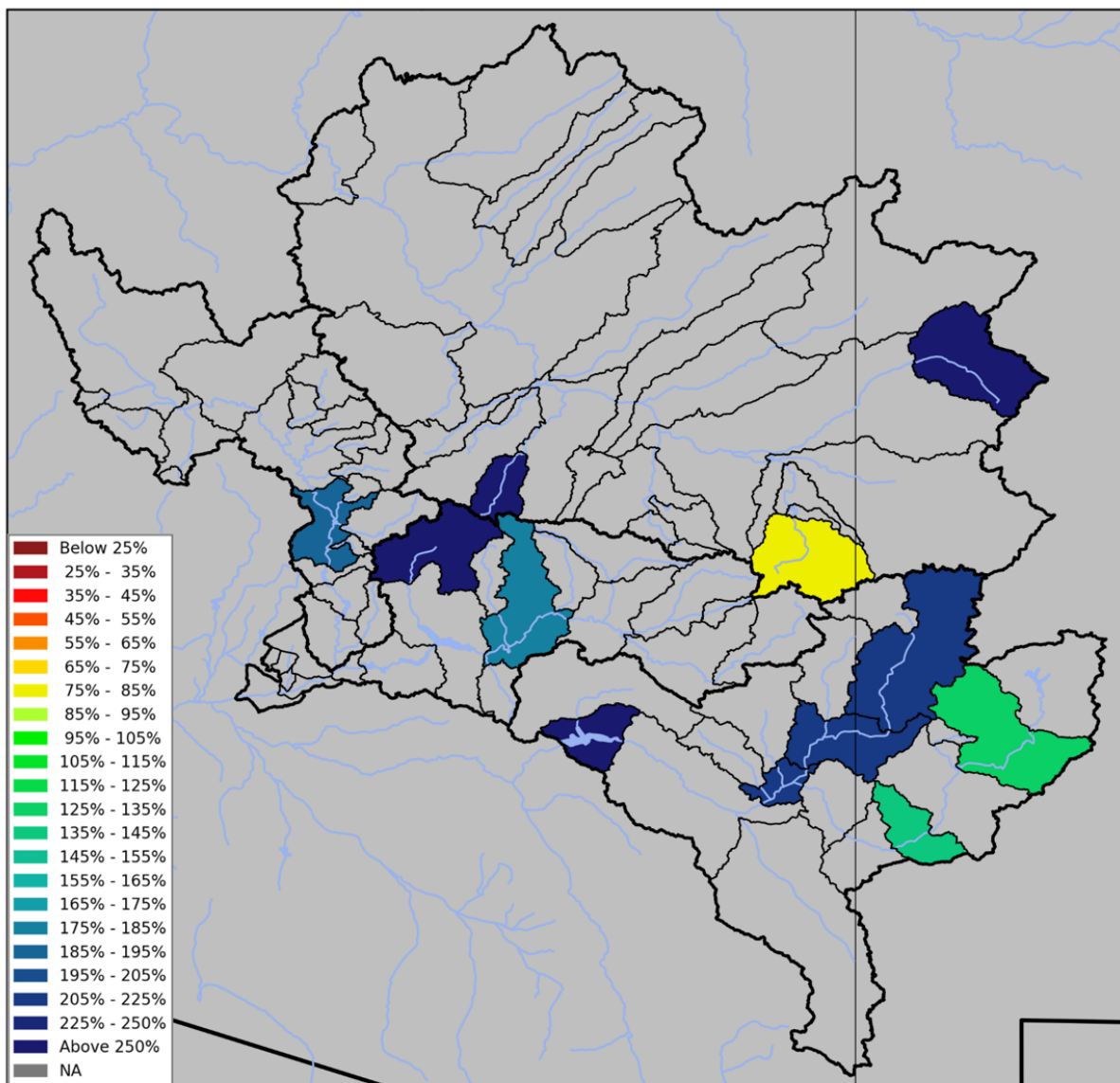
February 1 CBRFC water supply forecast ranges by basin:

April-July Water Supply Forecast Ranges (%Average) <i>*January-May Forecast Period (%Median)</i>	
UPPER COLORADO RIVER BASIN	
<u>Basin</u>	<u>Forecast Range</u>
Lake Powell	117
Green River Basin	
Upper Green	85-105
Duchesne	110-160
Yampa/White	125-170
Price/San Rafael/Dirty Devil	115-175
Colorado River Headwaters	
Above Kremmling	95-130
Kremmling to Cameo	95-110
Southwest Colorado	
Gunnison	90-145
Dolores	105-125
San Juan	95-120
LOWER COLORADO RIVER BASIN	
Virgin	140-150
<i>*Little Colorado</i>	80-255
<i>*Verde</i>	195
<i>*Salt</i>	180-250
<i>*Upper Gila</i>	135-315
GREAT BASIN	
Bear	105-135
Weber	110-150
Six Creeks	125-195
Provo/Utah Lake	125-185
Sevier	115-205

Seasonal Water Supply Forecasts



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



Lower Colorado River Basin (AZ/NM)
February 2023 January-May forecast volumes as a percent of 1991-2020 median
(50% exceedance probability forecast).

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

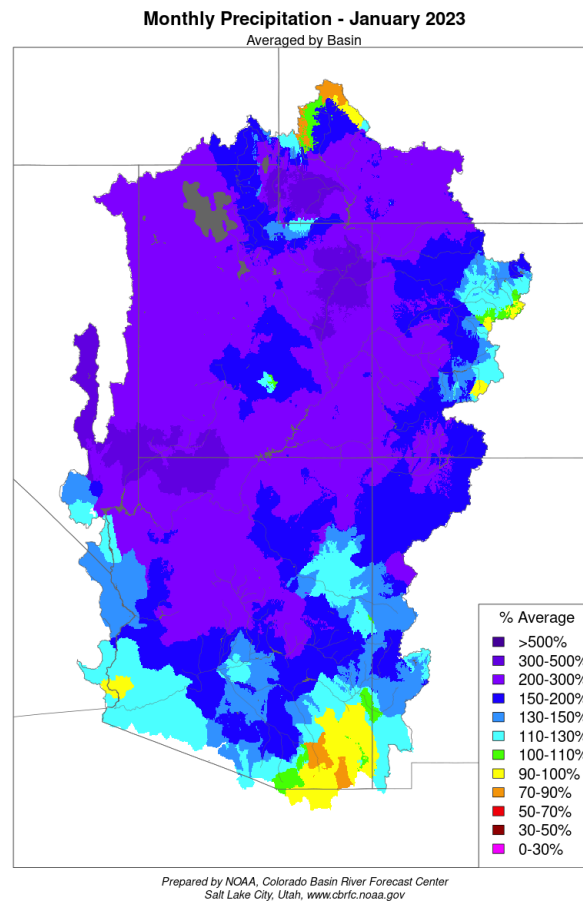
Water Supply Discussion

January Precipitation

Following above average December precipitation, weather remained active across the region during much of January, with UT and AZ continuing to receive more precipitation than WY and CO. January precipitation along Colorado's Western Slope was generally above average, with more storms targeting northern (White, Yampa) and southern (Gunnison, Dolores, San Juan) basins, where precipitation at SNOTEL stations was 150-200% of average for the month. The Colorado River headwater basins (above Cameo) in west central CO received around 125% of average precipitation. The exception in the UCRB is the northern Upper Green River Basin in southwest WY, where January precipitation was around 90% of normal.

January precipitation across the LCRB was generally much above average, with only a small area in far southwest AZ seeing near to below average precipitation during the month. Central AZ received 5-10 inches of precipitation at most SNOTEL stations, which is around 200-275% of average, while east central AZ received 2-5 inches (~125-200% of average).

In the GB, January precipitation was generally 150-225% of average. Around 10 SNOTEL stations along Utah's Wasatch Range reported record precipitation amounts during January, and most stations received precipitation amounts above the 85th percentile.

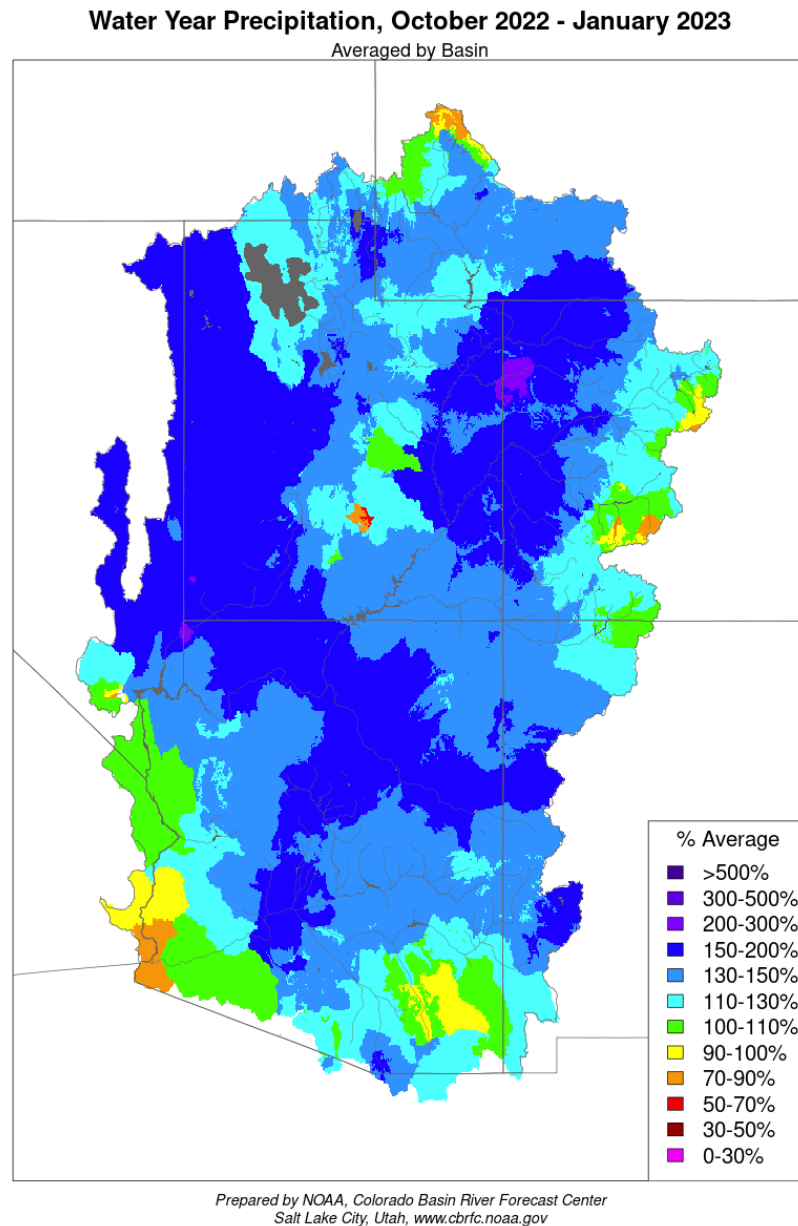


January 2023 percent of average precipitation.

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

Water Year Precipitation

Water year precipitation can be used as a good indicator of early season water supply conditions. October precipitation was above average across much of AZ as well as lower elevation areas along the UT/CO border, while the majority of the GB and Upper Green River Basin received below normal precipitation during the month. A few storm systems moved through the region during November, with precipitation primarily targeting western UT, southwest WY, and northwest CO. Following above average December and January precipitation, water year precipitation-to-date (October-January) is generally near to above average across the region, and is summarized in the figure and table below.



Water Year 2023 percent of normal precipitation.

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

Water Year 2023 CBRFC Precipitation (Significant Runoff Areas) Percent of 1991-2020 Average		
UPPER COLORADO RIVER BASIN		
	Jan	Oct-Jan
Above Lake Powell	170	123
Green River Basin		
Above Fontenelle	92	97
Above Flaming Gorge	120	110
Yampa/White	180	140
Duchesne	219	132
Price/San Rafael/Dirty Devil	206	141
Colorado River Headwaters		
Above Kremmling	124	106
Eagle	109	110
Roaring Fork	143	117
Above Cameo	135	114
Southwest Colorado		
Gunnison	169	119
Dolores	198	132
San Juan	192	119
LOWER COLORADO RIVER BASIN		
Virgin	291	167
Little Colorado	218	148
Verde	235	153
Salt	188	137
Upper Gila	151	138
GREAT BASIN		
Bear	155	125
Weber	168	134
Six Creeks	190	142
Provo/Utah Lake	214	148
Sevier	216	143

December/January precipitation across LCRB basins, showing above average winter precipitation, which is atypical given the current La Niña phase typically results in below average winter precipitation across the southwest US.

Water Year 2023 CBRFC Precipitation (Significant Runoff Areas) Percent of 1991-2020 Average		
LOWER COLORADO RIVER BASIN		
	Dec	Jan
Virgin	114	291
Little Colorado	118	218
Verde	112	235
Salt	137	188
Upper Gila	151	151

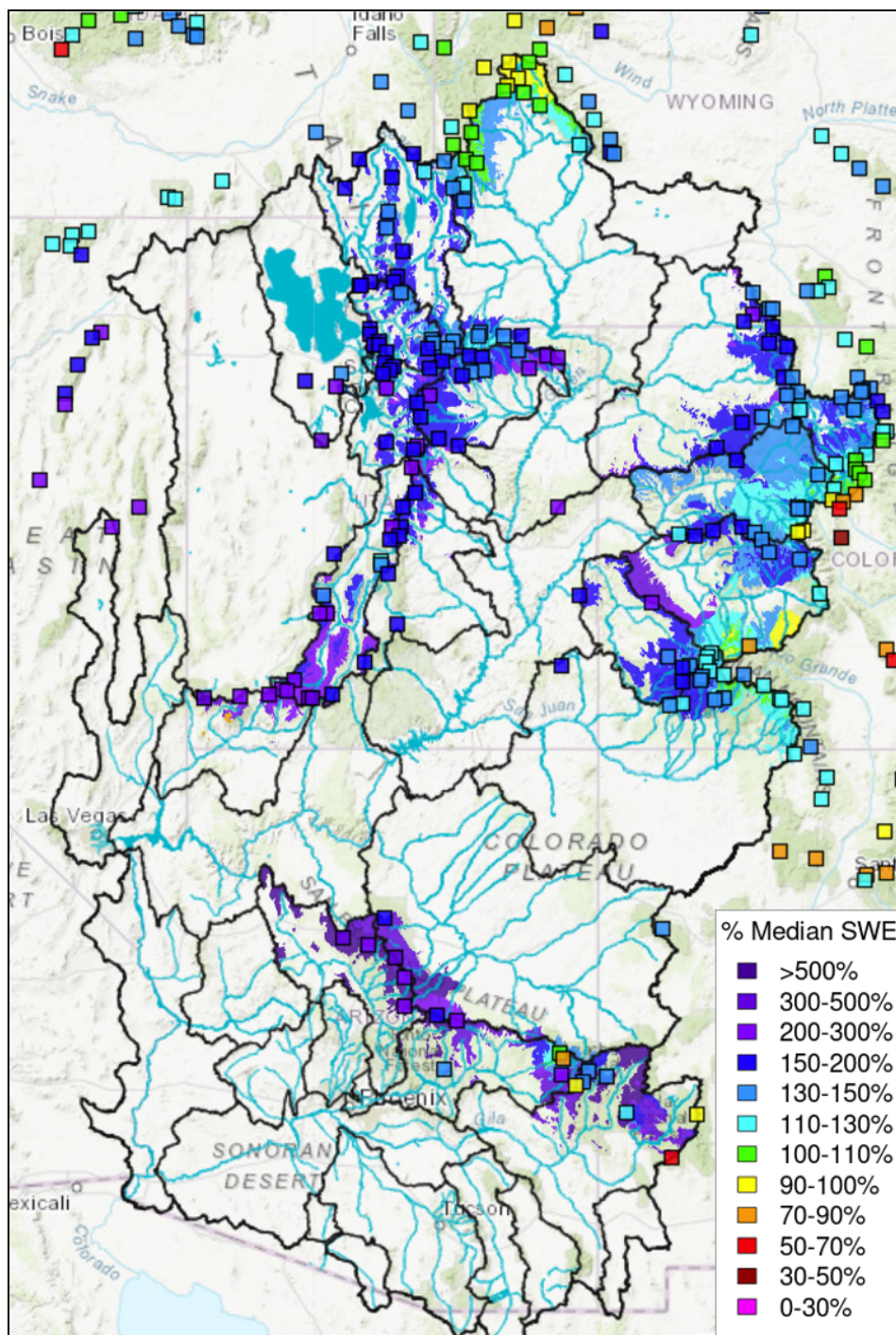
Snowpack

February 1 CBRFC model snow water equivalent (SWE) conditions are above normal across the CRB and GB. Across the UCRB, SWE conditions during January improved in UT (Duchesne, Price, San Rafael, Dirty Devil basins) and southwest CO (Gunnison, Dolores, San Juan) while snowpack conditions as a percent of normal generally remained steady across southwest WY (Upper Green) and northwest CO (White, Yampa, Colorado River headwaters). February 1 SWE at most SNOTEL stations in the White/Yampa is ranked in the top five of the station's record and above the 95th percentile.

Across the LC, percent of normal SWE can be highly variable due to percentages being computed using smaller values, and precipitation type (rain vs. snow) having a large impact on percent of normal conditions. This year is a good example as winter temperatures across the LC have been below normal with more snow than normal observed at lower elevations leading to large percent of normal snowpack conditions. With that said, February 1 SWE conditions across the LC are much above normal and exceeding expectations because La Niña conditions usually result in drier than average winter weather across the southwest US.

February 1 SWE conditions across the GB are much above normal and generally range between 150-200% of the 1991-2020 historical median. Most SNOTEL stations in UT are reporting February 1 SWE amounts ranking in the top five of the station's record and above the 90th percentile, with around five stations reporting record February 1 SWE amounts. CBRFC model SWE conditions are summarized in the table and figure below.

Water Year 2023 CBRFC Model SWE (Significant Runoff Areas) Percent of 1991-2020 Median			
UPPER COLORADO RIVER BASIN			
	Jan1	Feb1	Change
Above Lake Powell	126	144	18
Green River Basin			
Above Fontenelle	112	106	-6
Above Flaming Gorge	127	126	-1
Yampa/White	160	163	3
Duchesne	146	174	28
Price/San Rafael/Dirty Devil	164	193	29
Colorado River Headwaters			
Above Kremmling	122	126	4
Eagle	118	120	2
Roaring Fork	114	126	12
Above Cameo	122	129	7
Southwest Colorado			
Gunnison	117	137	20
Dolores	122	165	43
San Juan	87	124	37
LOWER COLORADO RIVER BASIN			
Virgin	121	263	142
Little Colorado	49	269	220
Verde	108	541	433
Salt	52	168	116
Upper Gila	28	215	187
GREAT BASIN			
Bear	165	156	-9
Weber	180	169	-11
Six Creeks	188	175	-13
Provo/Utah Lake	187	191	4
Sevier	159	183	24



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

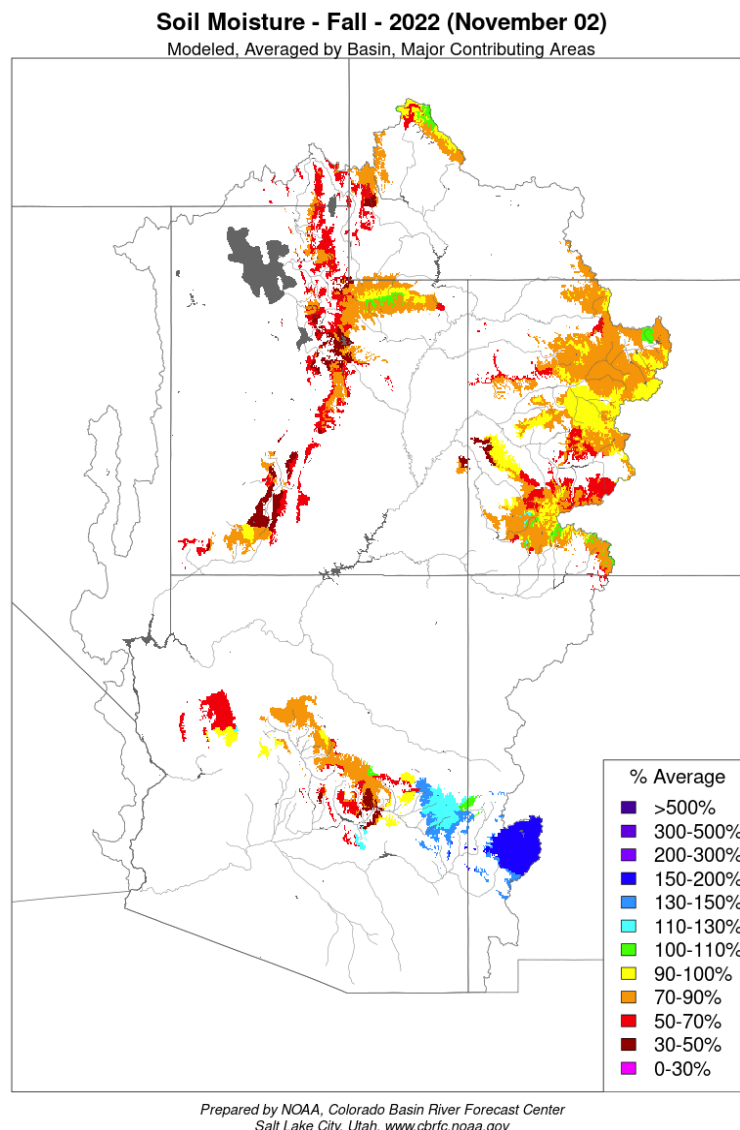
For updated SNOTEL information click [here](#).

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

Soil Moisture

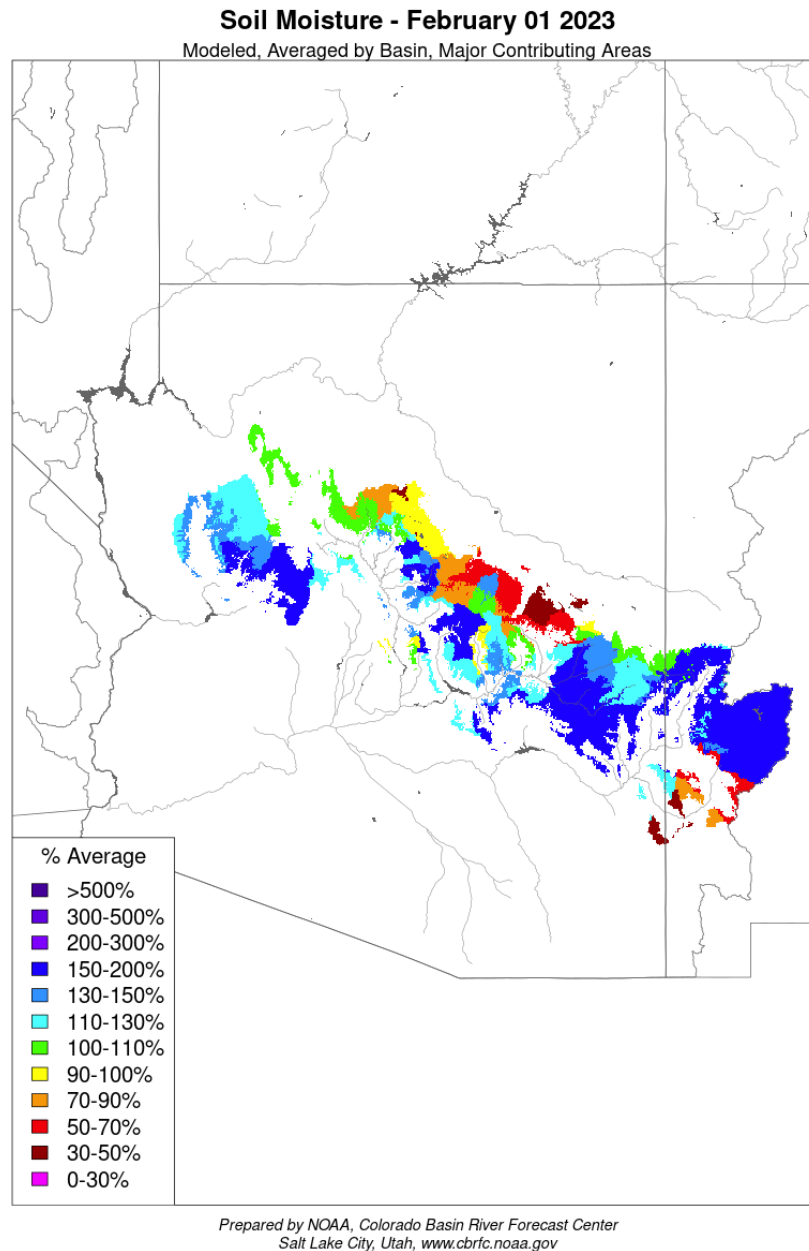
CBRFC hydrologic model soil moisture states are adjusted in the fall after the irrigation season and prior to the winter snowpack accumulation to accurately reflect observed baseflow conditions. CBRFC model fall soil moisture conditions impact early season water supply forecasts and the efficiency of spring runoff. Above average fall soil moisture conditions have a positive impact (increased runoff efficiency) on early season water supply forecasts while below average conditions have a negative impact (decreased runoff efficiency). The timing and magnitude of spring runoff is ultimately a result of SWE conditions, spring weather, and antecedent soil moisture conditions.

A favorable monsoon season helped to improve soil moisture conditions, especially across southwest CO (San Juan, Dolores basins) and the southeast LCRB (Salt, Upper Gila basins). However, Fall (antecedent) soil moisture conditions remain below average across many of the major runoff producing areas. UCRB model soil moisture conditions are generally better (near to below average) when compared to GB soil moisture conditions (below to much below average).



November 2022 CBRFC hydrologic model soil moisture conditions.

Soil moisture conditions tend to fluctuate more in the LCRB of AZ and NM in the winter due to the frequency of rain events and melting snow. Soil conditions in the fall are less informative than they are in the northern basins that remain under snowpack throughout the winter season. Basins with above average soil moisture conditions can be expected to experience more efficient runoff from rainfall or snowmelt while basins with below average soil moisture conditions can be expected to have lower runoff efficiency until soil moisture deficits are fulfilled. LCRB model soil moisture conditions (image below) improved during January as a result of above average precipitation, and early February model soil moisture is above average in most basins.

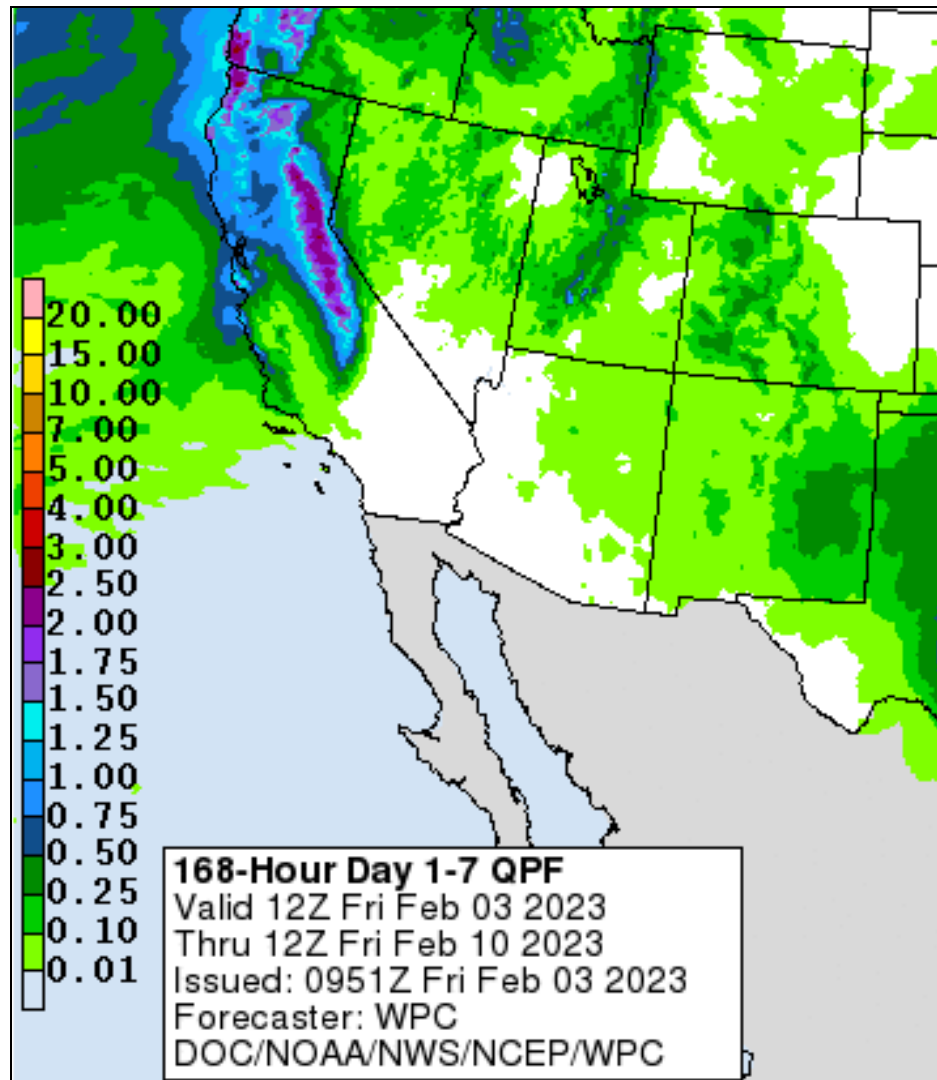


Lower Colorado River Basin (AZ/NM) model soil moisture - February 1, 2023.

For CBRFC hydrologic model soil moisture conditions click [here](http://www.cbrfc.noaa.gov).

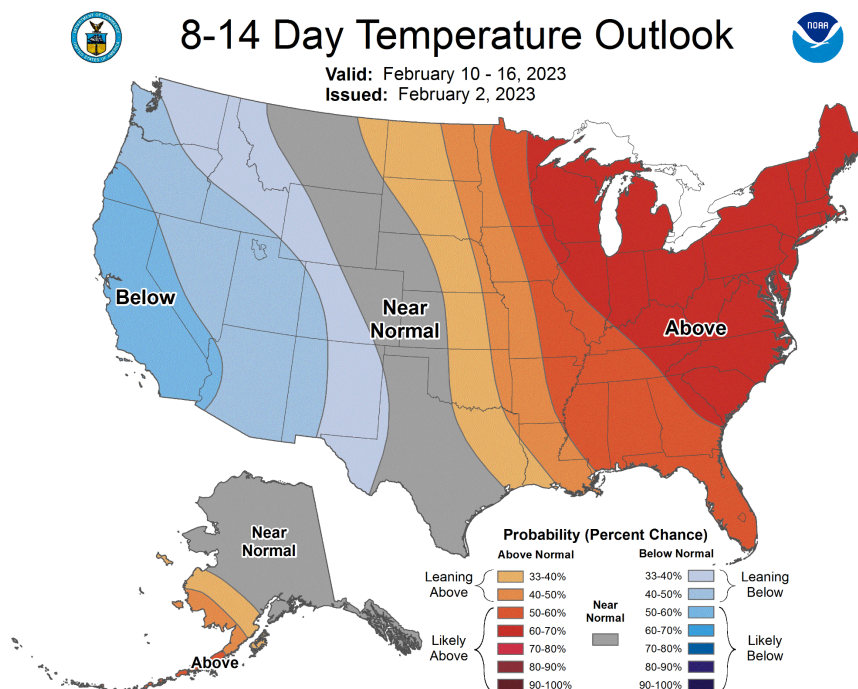
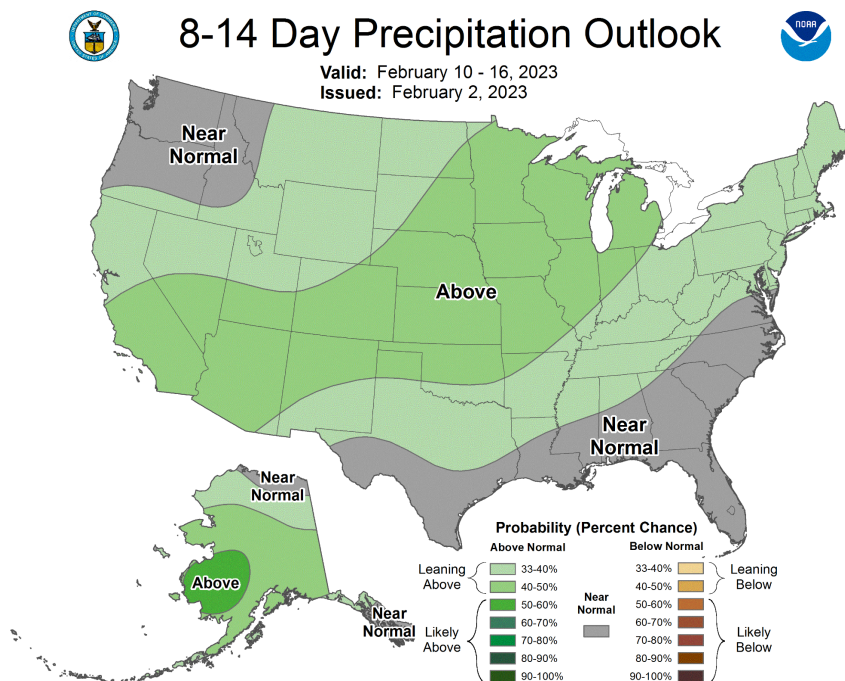
Upcoming Weather

The first few days of February have seen less active weather, with high pressure currently centered near the UT/CO border. A weak and mostly dry storm system will cross northern UT today (Friday) into early Saturday, with little to no precipitation expected through Saturday. On Sunday, a storm system is expected to move through the GB and produce 0.25-0.75" of precipitation across Utah's Wasatch Range, with amounts generally less than 0.25" across western CO. Some lingering/light precipitation from this system is expected across the region Monday and Tuesday, with highest amounts (up to 0.25") expected across southwest CO.



NWS Weather Prediction Center 7-day precipitation forecast - February 3-9, 2023.

The 8-14 day (February 10-16) outlook from the Climate Prediction Center (CPC) is favoring a more active weather pattern returning across the western US, with increased chances of above normal precipitation and below normal temperatures across the CRB and GB. CPC's 8-14 day forecast discussion mentions amplified troughing near the West Coast, an increasingly wet pattern after day 10, and good agreement between weather models.



Climate Prediction Center precipitation (top) and temperature (bottom) probability forecasts - February 10-16, 2023.

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