Colorado Basin River Forecast Center
National Weather Service

January 1, 2024 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 Conditions Summary

Water year precipitation-to-date (October-December) is below average across the region. While most areas received precipitation during each of the first three months of water year 2024, the most frequent storm activity has occurred across the northern GB and northwest CO. January 1 CBRFC model snow water equivalent (SWE) conditions generally range between 40-70% of normal across the UCRB, 0-35% of normal across the LCRB, and 45-70% of normal across the GB.

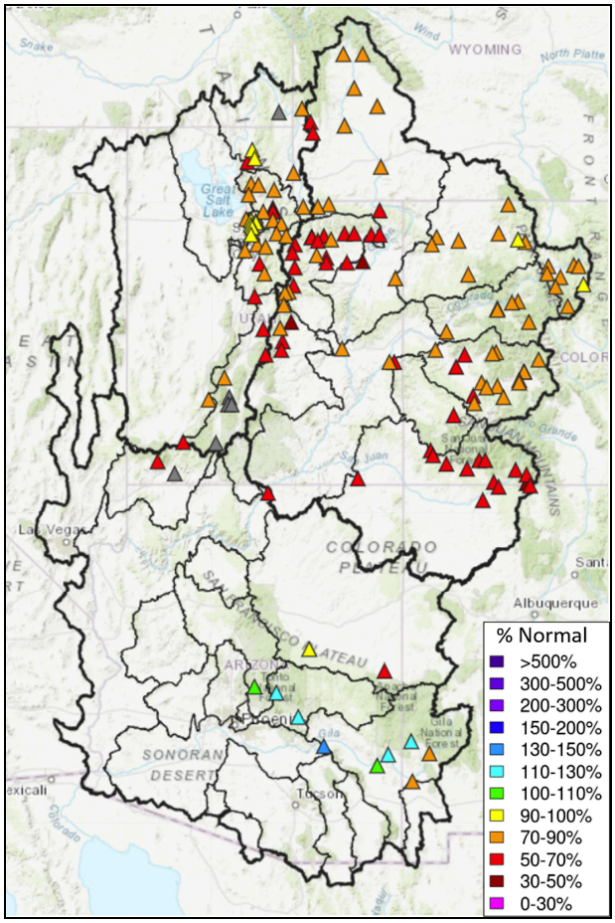
Forecasted seasonal (April-July) water supply volumes are below normal in the UCRB and near to below normal in the GB. LCRB January-May volume forecasts are generally closer to normal and take into account the current El Niño, which is expected to continue through the winter and typically results in increased chances of wetter winter weather across the LCRB.

After a prolonged period of unusually warm and dry weather, a cooler, wetter weather pattern is setting up across the western US for at least the first half of January. A low pressure system will move through the area this weekend bringing rain and snow to the majority of the CBRFC area. Precipitation totals by Monday (January 8) will be in the 0.75 to 1 inch range across the higher elevations of UT and CO and between 0.5 and 0.75 inches across the higher elevations of AZ. This storm will be the first in a series of storms expected to bring precipitation to the area.

Water Supply Forecasts

Forecasted seasonal (April-July) water supply volumes are below normal in the UCRB and near to below normal in the GB. LCRB January-May volume forecasts are generally closer to normal and take into account the current El Niño, which is expected to continue through the winter and typically results in increased chances of wetter winter weather across the LCRB.

January 1 water supply forecasts are summarized in the figure and table below.



Colorado Basin River Forecast Center Water Supply Forecasts
January 1, 2024

Basin	Volume (KAF)	%Normal (1991-2020)	Period
UPPER COLORADO RIVER BASIN			
Lake Powell	4200	66	Apr-Jul
Green River Basin			
Green-Flaming Gorge Reservoir	675	70	Apr-Jul
Yampa-Deerlodge	1030	87	Apr-Jul
Duchesne-Tabiona	73	71	Apr-Jul
Colorado River Headwaters			
Colorado-Kremmling	710	82	Apr-Jul
Eagle-Gypsum	265	79	Apr-Jul
Roaring Fork-Glenwood Springs	520	79	Apr-Jul
Colorado-Cameo	1840	81	Apr-Jul
Southwest Colorado			
Gunnison-Blue Mesa Reservoir	490	77	Apr-Jul
Dolores-McPhee Reservoir	145	57	Apr-Jul
San Juan-Navajo Reservoir	375	60	Apr-Jul
Animas-Durango	265	69	Apr-Jul
LOWER COLORADO RIVER BASIN			
Virgin-Virgin (*Regulated)	47	84	Apr-Jul
Little Colorado-Chevelon Creek	12.6	91	Jan-May
Verde-Above Horseshoe Dam	169	109	Jan-May
Salt-Roosevelt	275	110	Jan-May
Upper Gila-San Carlos Reservoir	106	145	Jan-May
GREAT BASIN			
Bear-UT/WY State Line	87	80	Apr-Jul
Weber-Oakley	83	75	Apr-Jul
Big Cottonwood Creek	29	85	Apr-Jul
Provo-Woodland	76	79	Apr-Jul
Sevier-Hatch (*Regulated)	30	62	Apr-Jul

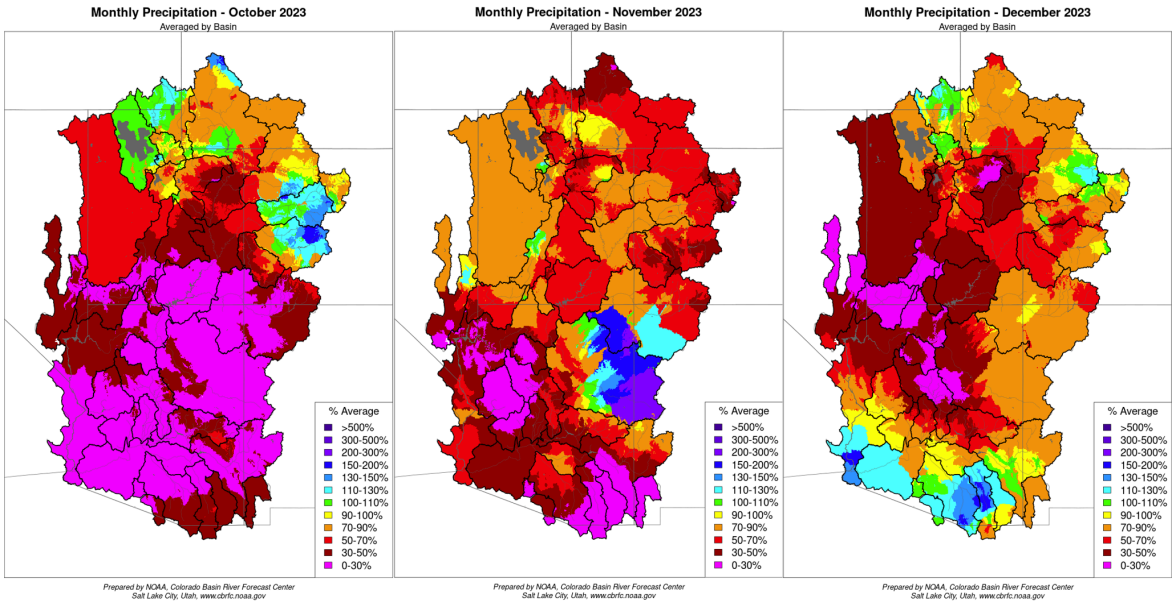
Apr-Jul runoff volumes as a percent of the 1991-2020 average.
Jan-May runoff volumes as a percent of the 1991-2020 median.

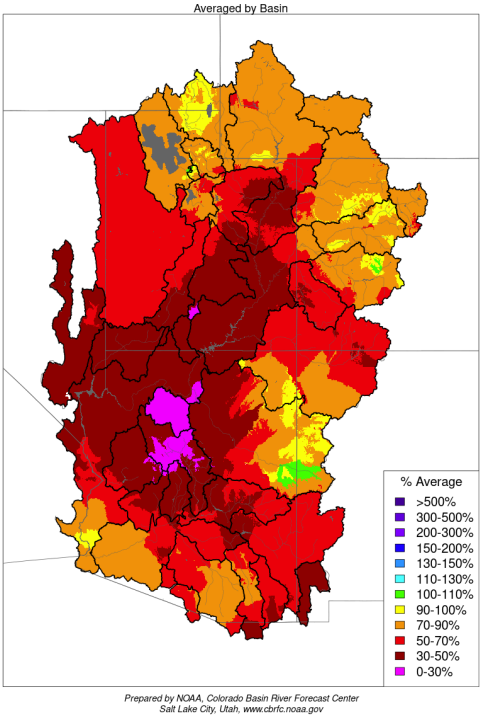
January 1, 2024 CBRFC seasonal water supply forecast summary.

CBRFC water supply forecast Map | List

Water Year Precipitation

Water year precipitation-to-date (October-December) is below average across the region, and is summarized in the figures and table below. While most areas received precipitation during each of the first three months of water year 2024, the most frequent storm activity has occurred across the northern GB and northwest CO.





Water Year 2024
CBRFC Precipitation (Major Contributing Areas)
Percent of 1991-2020 Average

	Oct	Nov	Dec	Oct-Dec
UPPER COLORADO RIVER BASIN				
Above Lake Powell	92	56	76	74
Green River Basin				
Above Fontenelle	125	38	76	76
Above Flaming Gorge	108	47	81	77
Yampa/White	96	57	99	83
Duchesne	77	52	53	61
Price/San Rafael/Dirty Devil	77	60	72	70
Colorado River Headwaters				
Above Kremmling	93	45	90	75
Eagle	137	53	83	87
Roaring Fork	135	66	73	88
Above Cameo	116	56	82	82
Southwest Colorado				
Gunnison	113	59	73	81
Dolores	61	57	67	62
San Juan	46	57	70	58
LOWER COLORADO RIVER BASIN				
Virgin	26	77	19	40
Little Colorado	28	81	43	50
Verde	26	42	31	33
Salt	32	68	60	54
Upper Gila	28	67	82	59
GREAT BASIN				
Bear	103	55	101	85
Weber	91	59	88	79
Six Creeks	97	72	93	86
Provo/Utah Lake	83	75	64	73
Sevier	38	82	33	51

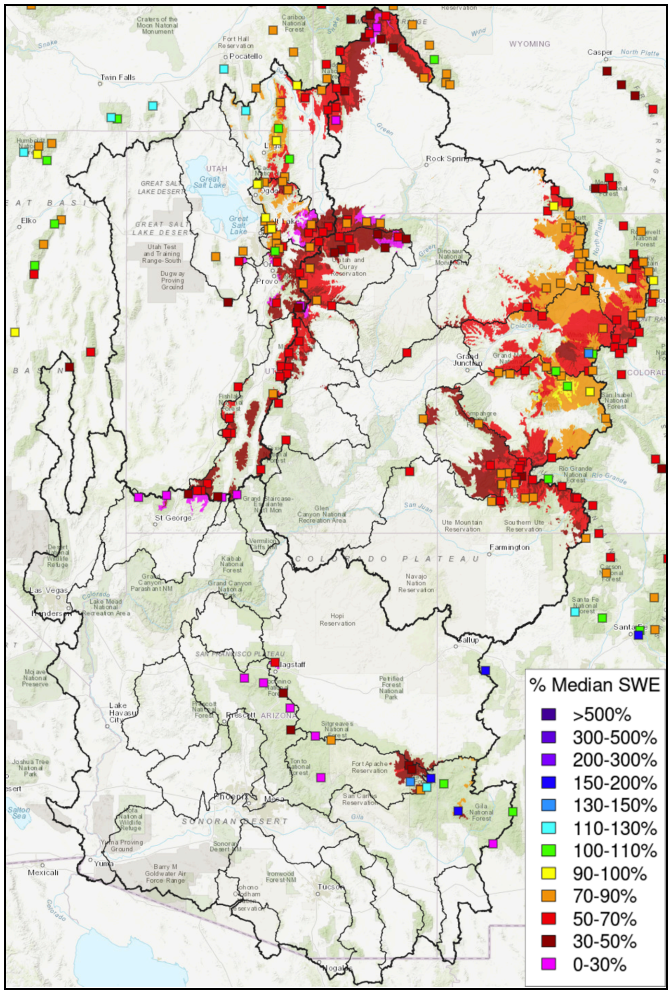
CBRFC monthly precipitation maps are available here.

Snowpack

January 1 CBRFC model snow water equivalent (SWE) conditions range between 40-70% of normal across the UCRB. UCRB SWE conditions at SNOTEL stations generally fall below the 25th percentile and rank in the driest 10 on record, with around 5-10 stations reporting record low January 1 SWE.

January 1 CBRFC model SWE conditions across the LCRB are less than 40% of normal, with snow limited to portions of the Virgin, Little Colorado, Salt, and Upper Gila River Basins. Little to no snow exists across central AZ, where around five SNOTEL stations have record low January 1 SWE.

January 1 CBRFC model SWE conditions range between 45-70% of normal across the GB. GB SWE conditions improve from south to north, and are generally better compared to the UCRB. SWE conditions are summarized in the figure and table below.



Water Year 2024 CBRFC Model SWE (Major Contributing Areas) Percent of 1991-2020 Median	
UPPER COLORADO RIVER BASIN	
	Jan1
Above Lake Powell	60
Green River Basin	
Above Fontenelle	49
Above Flaming Gorge	53
Yampa/White	71
Duchesne	42
Price/San Rafael/Dirty Devil	54
Colorado River Headwaters	
Above Kremmling	66
Eagle	68
Roaring Fork	69
Above Cameo	68
Southwest Colorado	
Gunnison	66
Dolores	52
San Juan	53
LOWER COLORADO RIVER BASIN	
Virgin	11
Little Colorado	6
Verde	0
Salt	33
Upper Gila	32
GREAT BASIN	
Bear	68
Weber	58
Six Creeks	72
Provo/Utah Lake	50
Sevier	44

January 1, 2024 percent median SWE -
NRCS SNOTEL Observed (squares) and CBRFC hydrologic model significant runoff areas.

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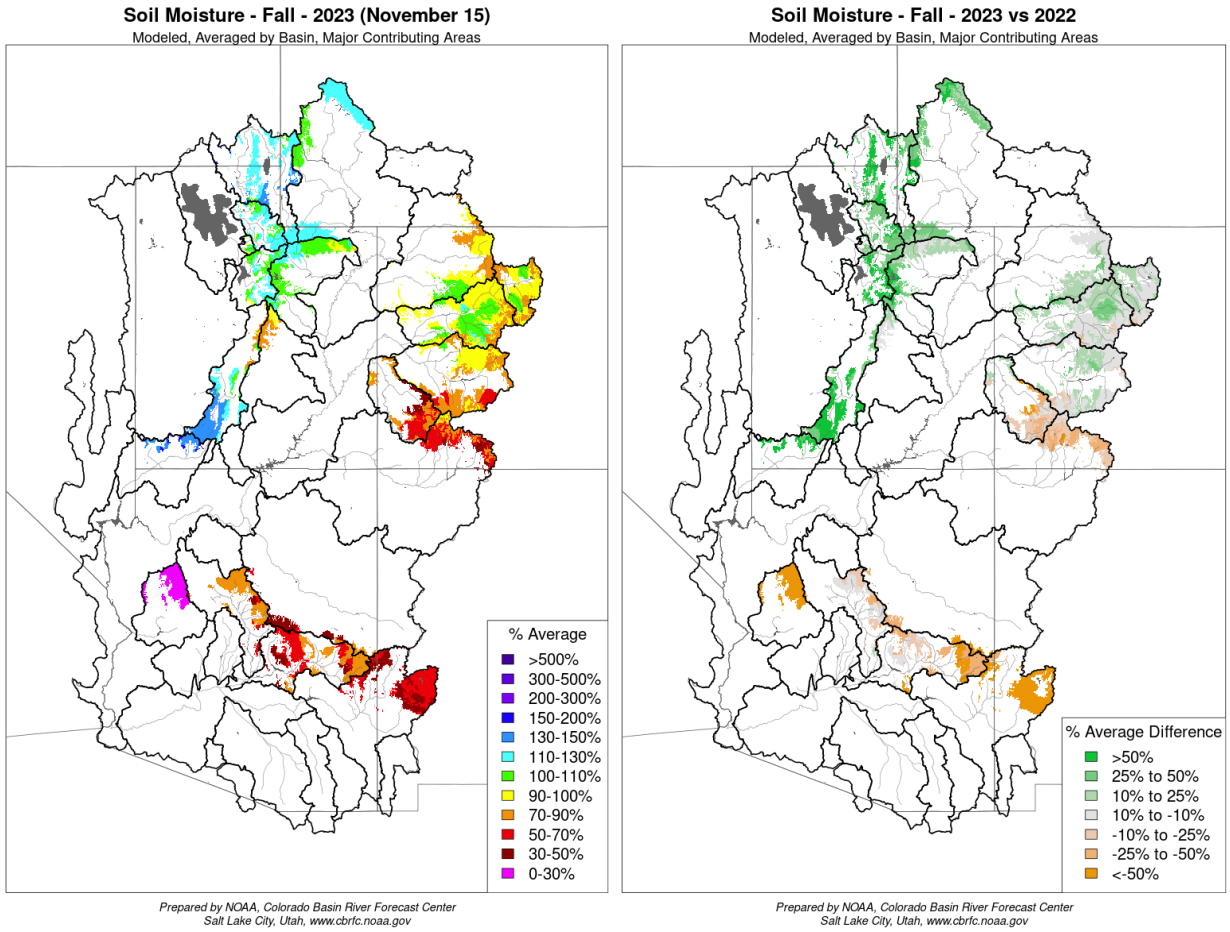
Snow conditions: SNOTEL | CBRFC Model

Soil Moisture

Above normal spring 2023 runoff was followed by a drier than normal Southwest monsoon season across much of the region. June-October precipitation was generally below the 15th percentile across most of AZ and southwest CO, resulting in below normal fall (antecedent) soil moisture conditions that are worse compared to a year ago. However, northern areas including the GB, Upper Green, and much of northwest CO received above normal summer/fall precipitation, leading to above normal fall soil moisture conditions that are improved from a year ago.



November 2023 CBRFC hydrologic model soil moisture conditions -
as a percent of the 1991-2020 average (left) and compared to November 2022 (right).

CBRFC model fall soil moisture conditions impact early season water supply forecasts and the efficiency of spring runoff. 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. The timing and magnitude of spring runoff is ultimately a result of snowpack conditions, spring weather, and soil moisture conditions.

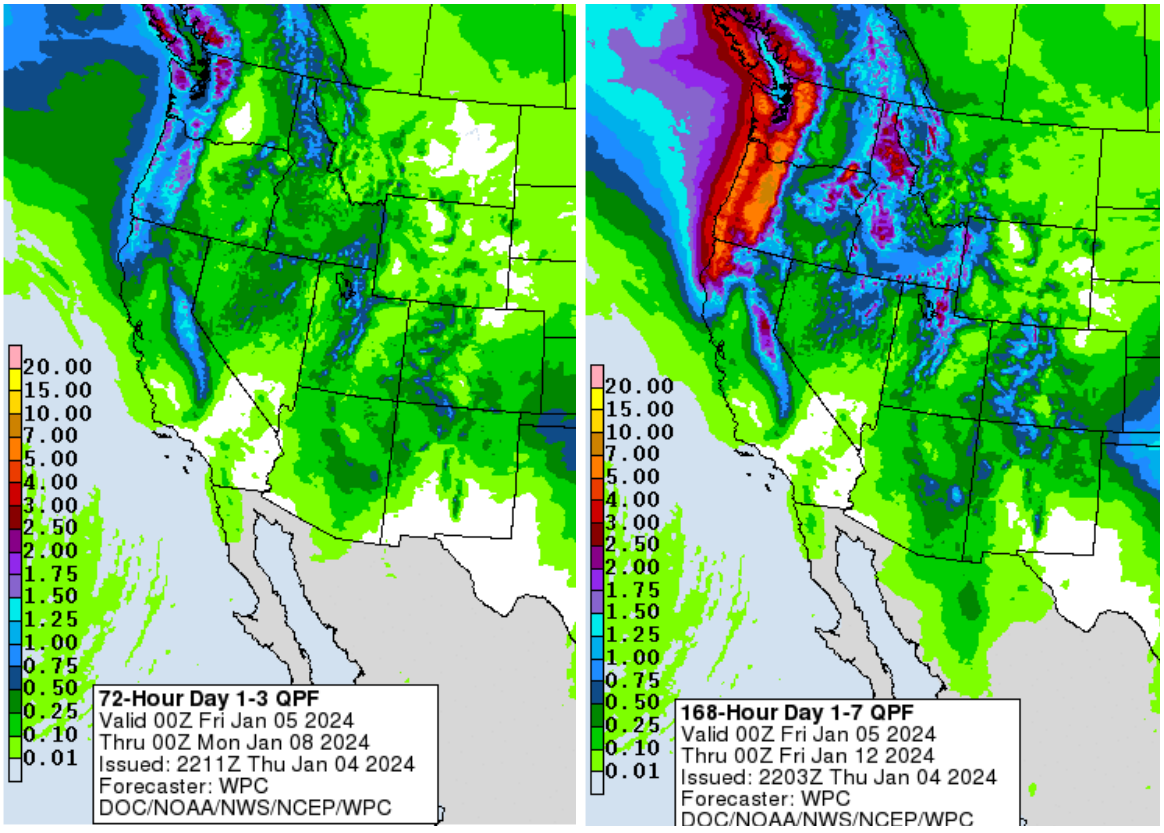
CBRFC hydrologic model soil moisture conditions are available here.

Upcoming Weather

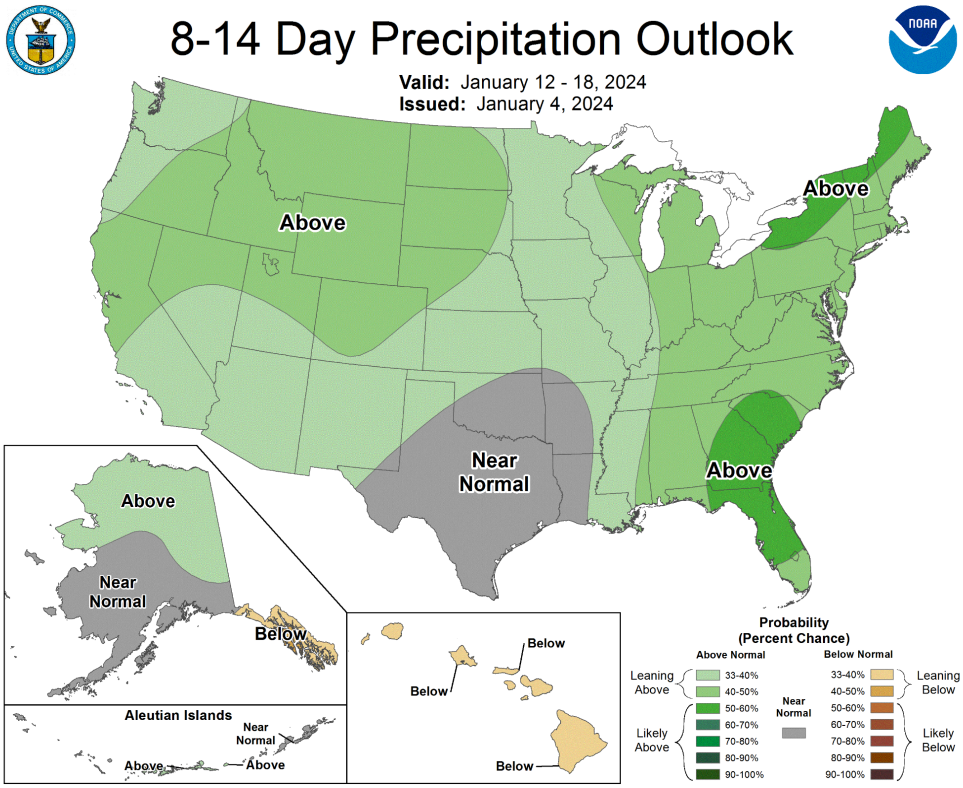
After a prolonged period of unusually warm and dry weather, a cooler, wetter weather pattern is setting up across the western US for at least the first half of January. A low pressure system will move through the area this weekend bringing rain and snow to the majority of the CBRFC area. Precipitation totals by Monday (January 8) will be in the 0.75 to 1 inch range across the higher elevations of UT and CO and between 0.5 and 0.75 inches across the higher elevations of AZ. This storm will be the first in a series of storms expected to bring precipitation to the area.

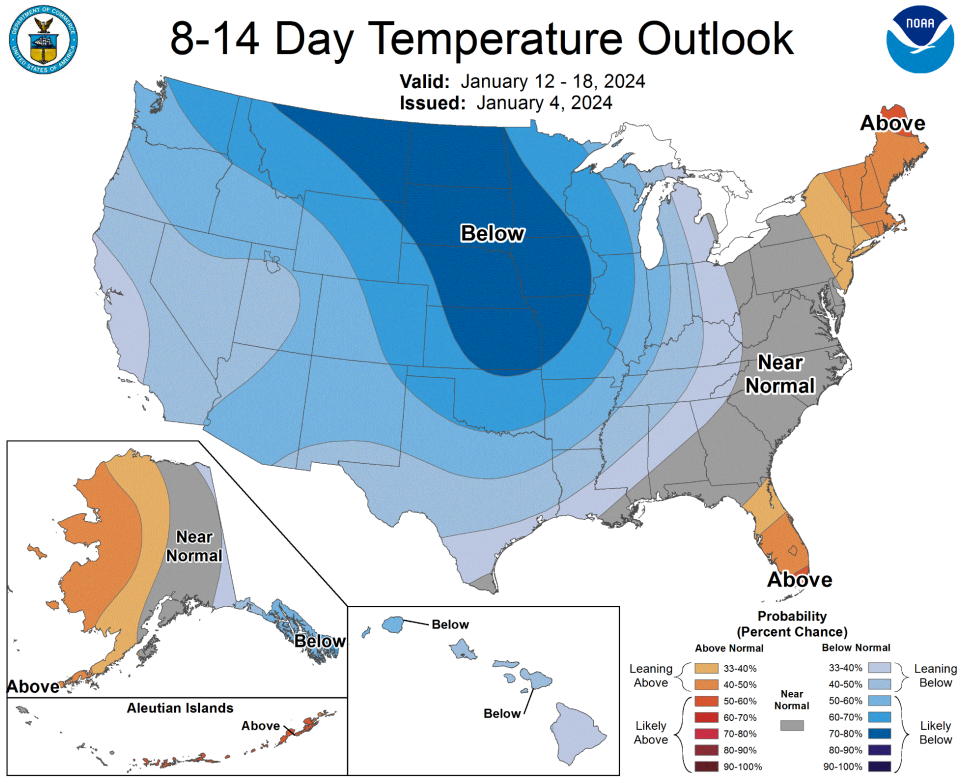
A second weather system will impact the area towards the latter half of next week. Models currently suggest that this storm will be positioned further north than the weekend system. There is uncertainty regarding how far south the storm track will extend. However, current model guidance suggests that the higher elevations of UT and western CO will see an additional 0.5 to 0.75 inches of precipitation.

The cold, wet pattern will persist through the middle of January. The Climate Prediction Center (CPC) is forecasting above-normal precipitation and below-normal temperatures for the 8-14 day period. Confidence in the 8-14 day forecast is high given unusually good agreement among various weather models.



NWS Weather Prediction Center precipitation forecast for January 5-8, 2024 (left), and January 5-12, 2024 (right).





Climate Prediction Center temperature and precipitation probability forecasts for January 12-18, 2024.

CBRFC Web Links
Official Water Supply Forecasts: Map | List
Latest Water Supply Model Guidance: Map | List
Snowpack Conditions: SNOTEL | CBRFC Model
Monthly Precipitation: Map | Image
Soil Moisture: Map | Image
7-day Precipitation Forecast: Map | Image
Climate Forecasts: Image
Water Supply Briefing Webinars: Registration

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