# Middle Colorado State of the River

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Glenwood Springs, CO May 3, 2022





ATMOSPHERIC SCIENCE

**COLORADO STATE UNIVERSITY** 

# what are we going to talk about tonight?

what's happened

We'll go over how the Water Year started, and what happened in the first seven months

where are we now

Next, we'll look at the current conditions

what's coming

We'll wrap up with what could potentially happen for the rest of the Water Year



where are we now

### what's coming

### U.S. Drought Monitor Colorado

We started Water Year 2022 (October 2021 – September 2021) with drought conditions, the worst in the Yampa valley.

87% of western CO was in a drought category.



#### September 28, 2021 (Released Thursday, Sep. 30, 2021)

Valid 8 a.m. EDT

Drought Conditions (Percent Area)						
	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	12.72	87.28	46.42	26.30	15.05	3.91
Last Week 09-21-2021	16.92	83.08	40.94	24.58	15.05	3.91
3 Month s Ago 06-29-2021	54.48	45.52	41.62	36.37	29.95	17.52
Start of Calendar Year 12-29-2020	0.00	100.00	100.00	93.73	76.17	27.60
Start of Water Year 09-29-2020	0.00	100.00	99.29	89.35	52.88	2.64
One Year Ago 09-29-2020	0.00	100.00	99.29	89.35	52.88	2.64

#### Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

Author:

Brian Fuchs National Drought Mitigation Center



#### droughtmonitor.unl.edu



where are we now

### what's coming

### Tuesday, September 28, 2021



While 2021 monsoon moisture helped, the base flows at the beginning of Water Year 2022 were well below average. This was mostly due to poor snowpack the previous spring.

**USGS** 

Explanation - Percentile classes					
Low	<=5	6-9	10-24		
Extreme hydrologic drought	me hydrologic Severe hydrologic drought		Below normal		

waterwatch.usgs.gov



### what's coming

Fall soil moisture was dry. Those dry soils are "locked in" during the cold season and need to be considered for the next spring.

That is the first bucket that will be filled. If it's empty, more snowpack goes to that than downstream and to reservoirs.



cbrfc.noaa.gov

Prepared by NOAA, Colorado Basin River Forecast Center Salt Lake City, Utah, www.cbrfc.noaa.gov

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### what's coming

#### average temperature rank: 3 months ending December 2021 (Oct-Dec)



#### precipitation rank: 3 months ending December 2021 (Oct-Dec)



Water Year 2022 started off extremely warm. Thanks to a couple strong atmospheric rivers in December, western CO saw a boost in moisture.

https://climate.colostate.edu/co\_cag/rank\_maps.html



### what's coming

precipitation rank: 3 months ending March 2022 (Jan-Mar)

#### average temperature rank: 3 months ending March 2022 (Jan-Mar)



#### statewide anomaly from 1901-2000 avg: -0.51 inches statewide rank: 45th driest/84th wettest source: NOAA/NCEI nclimgrid map: Colorado Climate Center/Colorado State University map generated 11 April 2022 10th 20th 35th 35th 20th 10th record record driest driest driest driest wettest wettest wettest wettest precipitation rank out of 128 years (1895-2022)

The next three months of the water year cooled down. Temperatures were much closer to the normal range. But after some good storm activity in January, there hasn't been as much moisture west of the Divide.

https://climate.colostate.edu/co\_cag/rank\_maps.html



### what's coming





April precipitation has not been kind. East of the Divide, it was extremely dry. West of the Divide, most areas were below average. We still need snow in April, even when the snowpack starts melting!

Thankfully, temperatures were not anomalously warm.

https://climate.colostate.edu/spi\_monthly\_maps.html



## what's coming

# U.S. Drought Monitor Colorado



### April 26, 2022

(Released Thursday, Apr. 28, 2022) Valid 8 a.m. EDT

#### Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	0.00	100.00	88.57	47.62	4.46	0.53
Last Week 04-19-2022	0.00	100.00	86.78	33.13	4.45	0.53
3 Month s Ago 01-25-2022	0.00	100.00	<mark>88.32</mark>	65.93	20.68	0.00
Start of Calendar Year 01-04-2022	0.00	100.00	<mark>95.49</mark>	67.08	22.25	0.00
Start of Water Year 09-28-2021	12.72	87.28	46.42	26.30	15.05	3.91
One Year Ago 04-27-2021	1. 19	98.81	89.13	60.45	32.13	16.68

#### Intensity:



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to https://droughtmonitor.unl.edu/About.aspx

#### <u>Author:</u>

Brad Rippey U.S. Department of Agriculture



#### droughtmonitor.unl.edu



### where are we now

## what's coming





### where are we now

### what's coming



https://www.nrcs.usda.gov/wps/portal/wcc/home/quicklinks/imap



### where are we now

### what's coming



https://www.nrcs.usda.gov/wps/portal/nrcs/main/co/snow/

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### where are we now

### what's coming

# SNOW WATER EQUIVALENT PROJECTIONS IN COLORADO HEADWATERS



https://www.nrcs.usda.gov/wps/portal/nrcs/main/co/snow/

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what's happened where are we now what's coming



cbrfc.noaa.gov



what's happened where are we now what's coming



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### where are we now

# what's coming



April-July forecasted streamflows and inflows across the Colorado River Basin.

cbrfc.noaa.gov



### April - July Unregulated Inflow into Lake Powell As of 2022-04-01



Typically 25% of the total contribution into Lake Powell comes from the Colorado River. This year, that's forecasted to be 33%.

Most likely forecast for Lake Powell is around 2 million AF short of the historical average.





For May, there is uncertainty in what temperatures will look like. But the outlook is leaning slightly toward drier than average conditions for western CO.

cpc.ncep.noaa.gov



where are we now

### what's coming





The seasonal outlook is very confident in above average temperatures for all of Colorado. It is very unlikely that the summer will be cooler than average.

cpc.ncep.noaa.gov

The seasonal models are leaning toward drier than average for the summer. But they do indicate a strong monsoon. May be a possibility that extends into CO again.



# Key Takeaways

- □ Long-term drought conditions remain a consistent feature of our landscape
- □ The start of snowpack season is occurring over low streams and dry soils
- □ The snowpack season has had its ups and downs, but has done okay
- Unfortunately, we needed an above average year to recover
- There will probably be some recovery on our local reservoirs, but overall, inflows to water supply is forecasted to be below average
- □ Summer heat is going to be a big concern
- Early melt out, dry conditions, hot temperatures will worsen drought conditions and increase risk for large wildfires
- Uncertainty on what the monsoon will bring us
- We need a strong consistent monsoon, and cooler temperatures as we go into August and September for soils to be in better condition going into next snowpack season





# Thank you



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