Colorado Climate Center

WATF Climate Update

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Water Availability Task Force
July 27th, 2021
Today’s Update

• Temperature and Precipitation Statistics
• Hydrological Conditions
• Outlook (2nd year La Niña?)
• Summary
2021 Water Year To Date

temperature, precipitation, standardized precipitation index
June was warm, and particularly, warm early

Numerous maximum temperature records in the middle of the month with a cooler spell at the end

2012, 2016, 2018 were warmer
We’ve seen much warmer than normal conditions across the west so far this summer, but cooler than normal on the southern plains.

Colorado has been in the gradient zone of this pattern.

Warmer than normal on the west slopes. Cooler than normal in the Arkansas River Valley.

New record high temp for GJT: 107!
Spring was a drought buster for eastern CO

The west slopes have stayed dry
Fairly average moisture for July so far with more to come.

A few holes in the precipitation (e.g. Fort Collins/Loveland)

NE corner below normal

Flash flooding has occurred on burn scars. This will likely continue to be an issue
Some drought relief in SW CO in June, though June is the dry season for SW CO.

Drought deepens in NW CO.
Above normal moisture for the water year east of the Continental Divide thanks to some big upslope storms

As expected, the west slopes have not recovered from a poor snow year.
 Appropriately, the Wet Mountains have been the wettest spot in the last 30 days.

CoAgMET precipitation in previous 30 days: 25 Jun 2021–25 Jul 2021
30-day SPI: 2021/06/23 - 2021/07/22

Data from High Plains Regional Climate Center and ACIS

http://climate.colostate.edu/~drought/spi.html
90-day SPI: 2021/04/24 - 2021/07/22

Data from High Plains Regional Climate Center and ACIS

http://climate.colostate.edu/~drought/spi.html
6-month SPI: 2021/01/22 - 2021/07/22

Data from High Plains Regional Climate Center and ACIS

http://climate.colostate.edu/~drought/spi.html
Long-term SPIs better correlated to water supply situation out west

http://climate.colostate.edu/~drought/spi.html
Drought

National Drought
Colorado Drought
Long-Term Drought
Map released: July 22, 2021
Data valid: July 20, 2021
Colorado

Map released: Thurs. July 22, 2021
Data valid: July 20, 2021 at 8 a.m. EDT

Intensity

None
D0 (Abnormally Dry)
D1 (Moderate Drought)
D2 (Severe Drought)
D3 (Extreme Drought)
D4 (Exceptional Drought)
No Data

Authors
United States and Puerto Rico Author(s):
Brad Rippey, U.S. Department of Agriculture
Pacific Islands and Virgin Islands Author(s):
Richard Heim, NOAA/NCEI
Major improvements to drought monitor this spring in E CO

Status quo in W CO (nowhere to go but up)

28.2% of state in extreme or exceptional drought
Low three month evaporative demand in E CO thanks to May

EDDI shows lower than normal evaporative demand in July too. Humidity?
Burlington Growing Season Evaporative Demand
July 17, 2020

PET (inches), April 1 - Present

May Jun Jul Aug Sep

Burlington Growing Season Water Balance
July 17, 2020

Water Balance (inches), April 1 - Present

May Jun Jul Aug Sep

http://climate.colostate.edu/~drought/et.php
Growing Season Water Balance (P/PET) Percentiles
July 17, 2020

Water balance (P/PET) from CoAgMET stations shows substantial recovery in the Arkansas River Valley, particularly at Rocky Ford.
Soil moisture has actually improved recently save for the Arkansas basin.
• Record low soil moisture for low elevations on the West Slopes

• Soil moisture has improved in the San Juans in recent weeks

• Topsoils drying out in eastern CO
USDA Topsoil Moisture by Short-Very Short
Percent of State Area
Weekly Value for Period Ending Jul 18, 2021

Means are calculated from historical weekly data published by USDA/NASS using the closest date to the equivalent date for this year.

Results are based on the short and very short percentages of topsoil moisture (upper 6 inches) reported by the USDA. Reports are based on subjective observations.
Outlook

Next 7 days
CPC Outlooks
Monsoon Progression
Precipitation Projections
ENSO setup for fall
NOAA 7-day precip forecast

Look for cooler, wetter conditions this spring as monsoonal moisture collides with mid-latitude cold front

Widespread totals > 1.00”, including NW CO
Monsoon

Clearly some monsoonal precipitation patterns beginning to take shape

Clear monsoonal pattern this week
8-14 day outlook
Seasonal outlook
Seasonal outlook

- Precip forecast heavily weighted on October
- 2nd year La Niña likely, which typically brings a dry winter
Precipitation Projections by Climate Region (credit: Klaus Wolter NOAA)
FORT COLLINS WY2021 Precipitation Projections

- 2021-07-25: 14.41" (Average: 12.75", 113% Ave)
- Long-Term Average (16.1")
- Average Projection (110% Ave)
- Above Average Projection (112% Ave)
- Below Average Projection (102% Ave)
- 111-Year Historical Accumulations
PUEBLO MEMORIAL AIRPORT WY2021 Precipitation Projections

- 2021-07-25: 11" (Average: 9.02", 122% Ave)
- Long-Term Average (12.57")
- Average Projection (116% Ave)
- Above Average Projection (119% Ave)
- Below Average Projection (110% Ave)
- 65-Year Historical Accumulations

Accumulated Precip (in.)

Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct
What’s the El Niño forecast?

La Niña conditions are likely to last through the winter. It may well fall apart in the spring. That is actually a good combination for Colorado.
Summary points

• Between spring and summer, most of Colorado has received decent moisture for spring/summer

• This drought has moved into long-term territory, and is, in many ways, more of a western region drought than a Colorado drought

• Three of the last four snowpacks, and four of the four last monsoons have been dry, and it’s showing in the streamflows and reservoirs

• This monsoon is shaping up better than recent years, but next winter could plunge us further into long-term drought if 2nd year La Niña manifests
Thank you!

To view this and other presentations: http://climate.colostate.edu/ccc_archive.html

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