

Current Climate Conditions and Outlook

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Assistant State Climatologist

November 15, 2022



ATMOSPHERIC SCIENCE
COLORADO STATE UNIVERSITY

Land Acknowledgement

I respectfully acknowledge that the land I live on, and work on (with Colorado State University), are the traditional and ancestral homelands of the Arapaho, Cheyenne, and Ute nations and peoples.

<https://landacknowledgment.colostate.edu>



*Download
Presentation*

climate.colostate.edu/pdfs/curr_conditions_nov2022.pdf





*Download
Presentation*

*Scan this code
to download
May workshop
presentation.*

*Helpful links and
emails included
for later
reference.*

climate.colostate.edu/pdfs/CO_drought_resources.pdf





SCAN ME

*We monitor drought
and climate conditions
weekly!*

*Check out our Colorado
Drought Update page
for resources.*

climate.colostate.edu/drought

Overview

Current Conditions

- Precipitation
- Snowpack
- Temperature
- Streamflow
- Soils and vegetation
- Evaporative demand

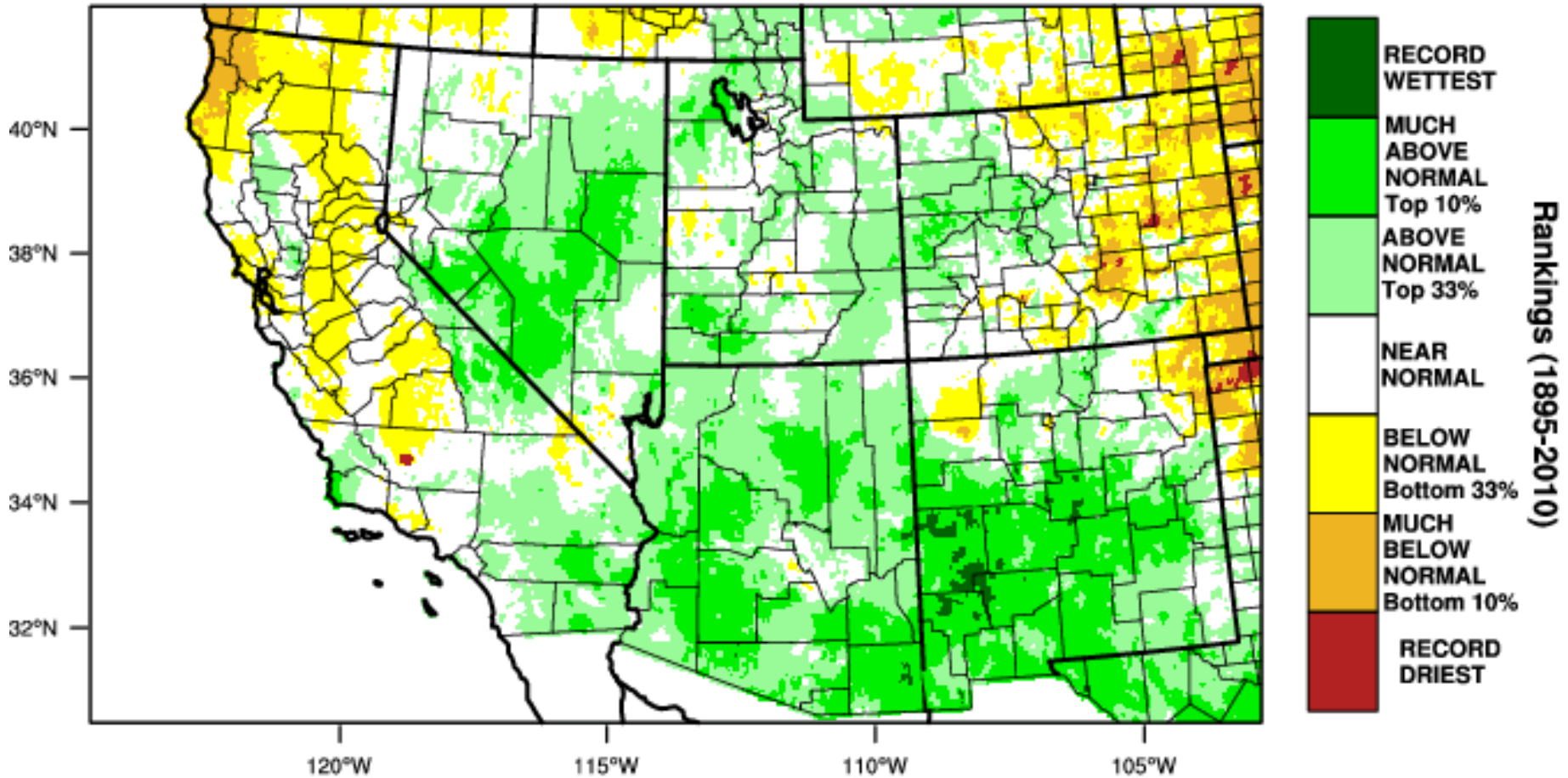
Outlook

- Next week
- 8-14 day
- Monthly and seasonal



Southwest - Precipitation

August-October 2022 Percentile

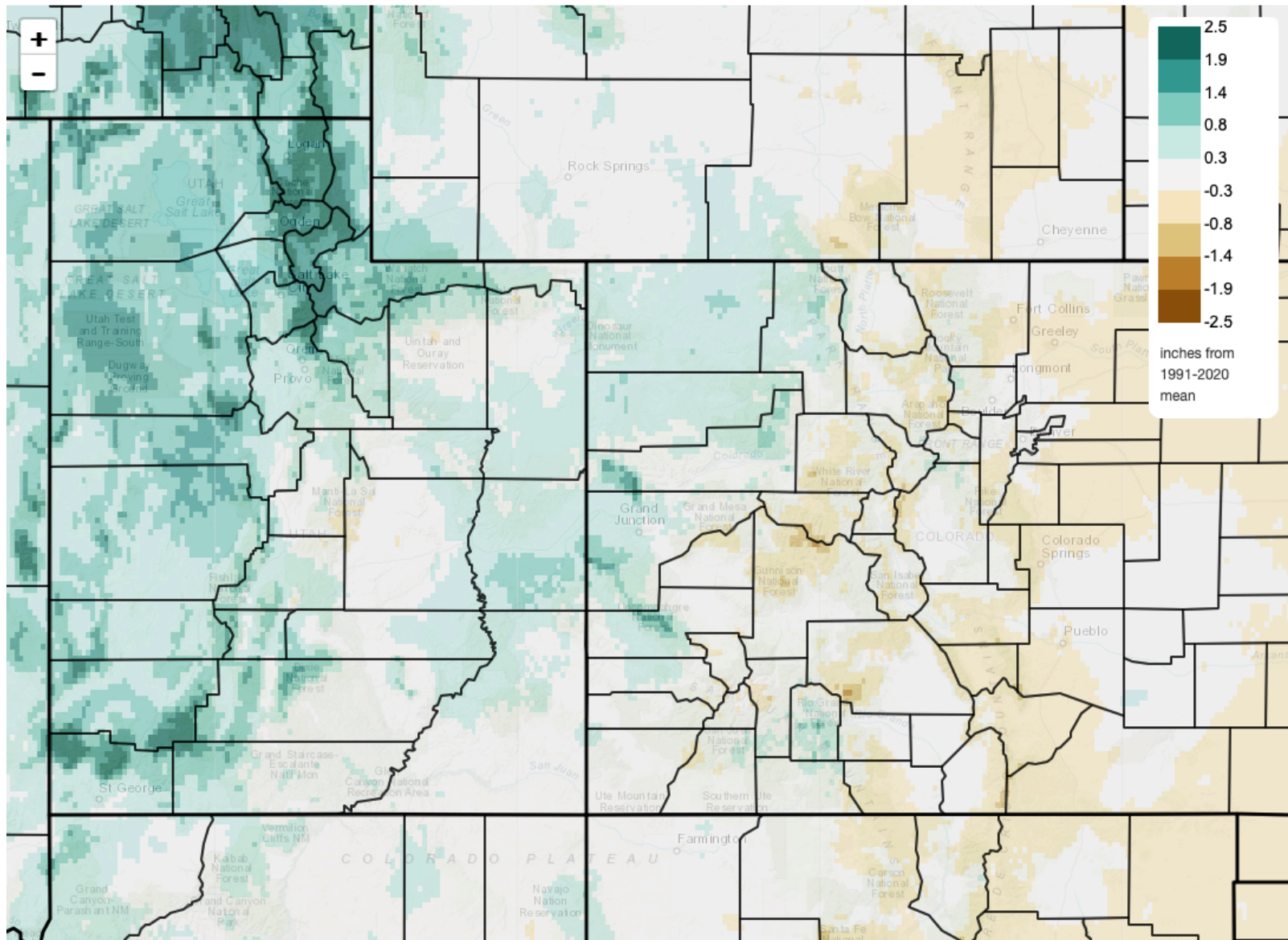


WestWide Drought Tracker - U Idaho/WRCC Data Source - PRISM (Prelim), created 11 NOV 2022

<https://wrcc.dri.edu/wwdt/index.php?region=sw>

Total Precipitation Anomaly, Last 15 Days

2022/10/29 - 2022/11/12



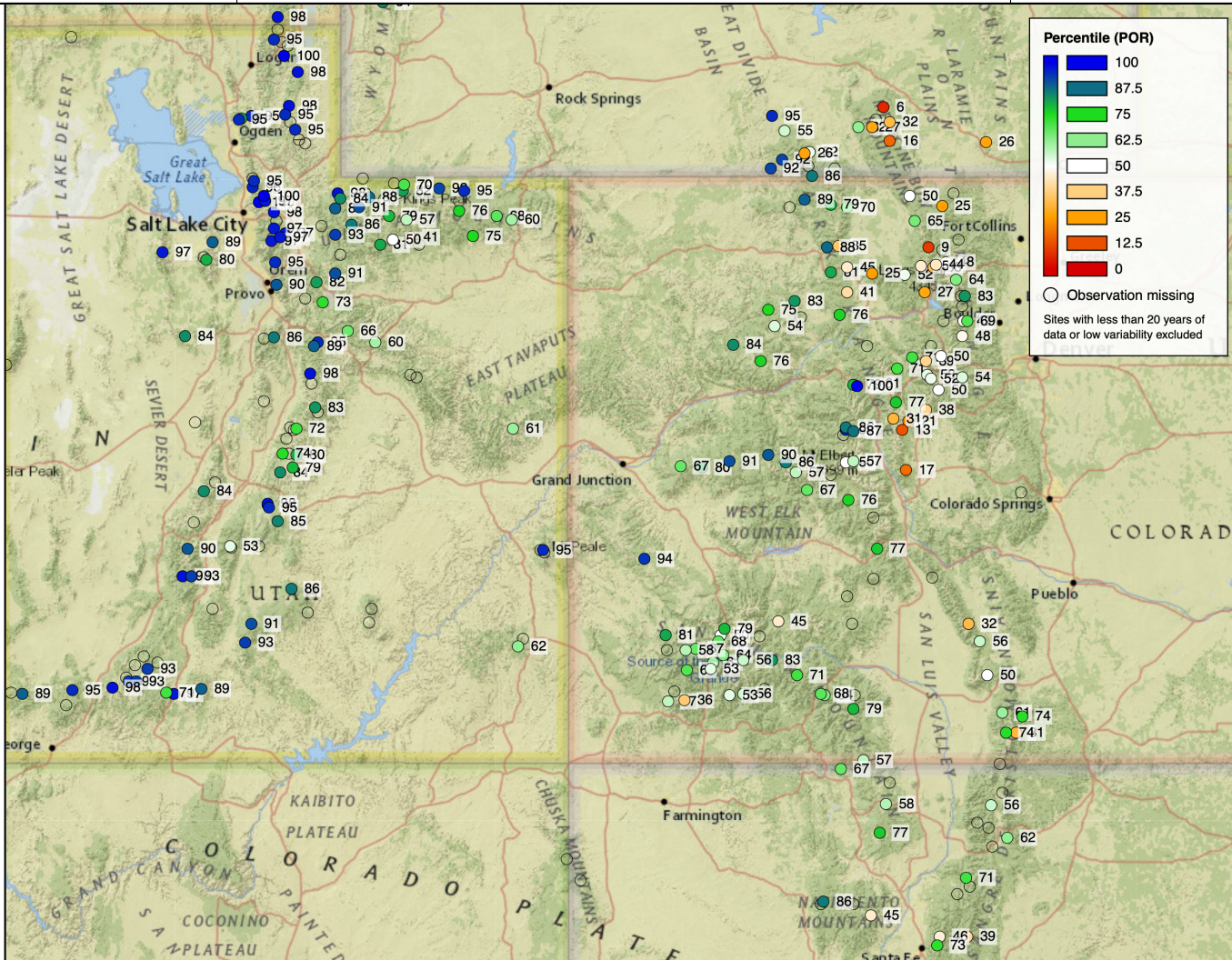
<https://climatetoolbox.org/tool/climate-mapper>



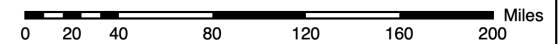
Snow Water Equivalent

Percentile (POR)

November 13, 2022, end of day



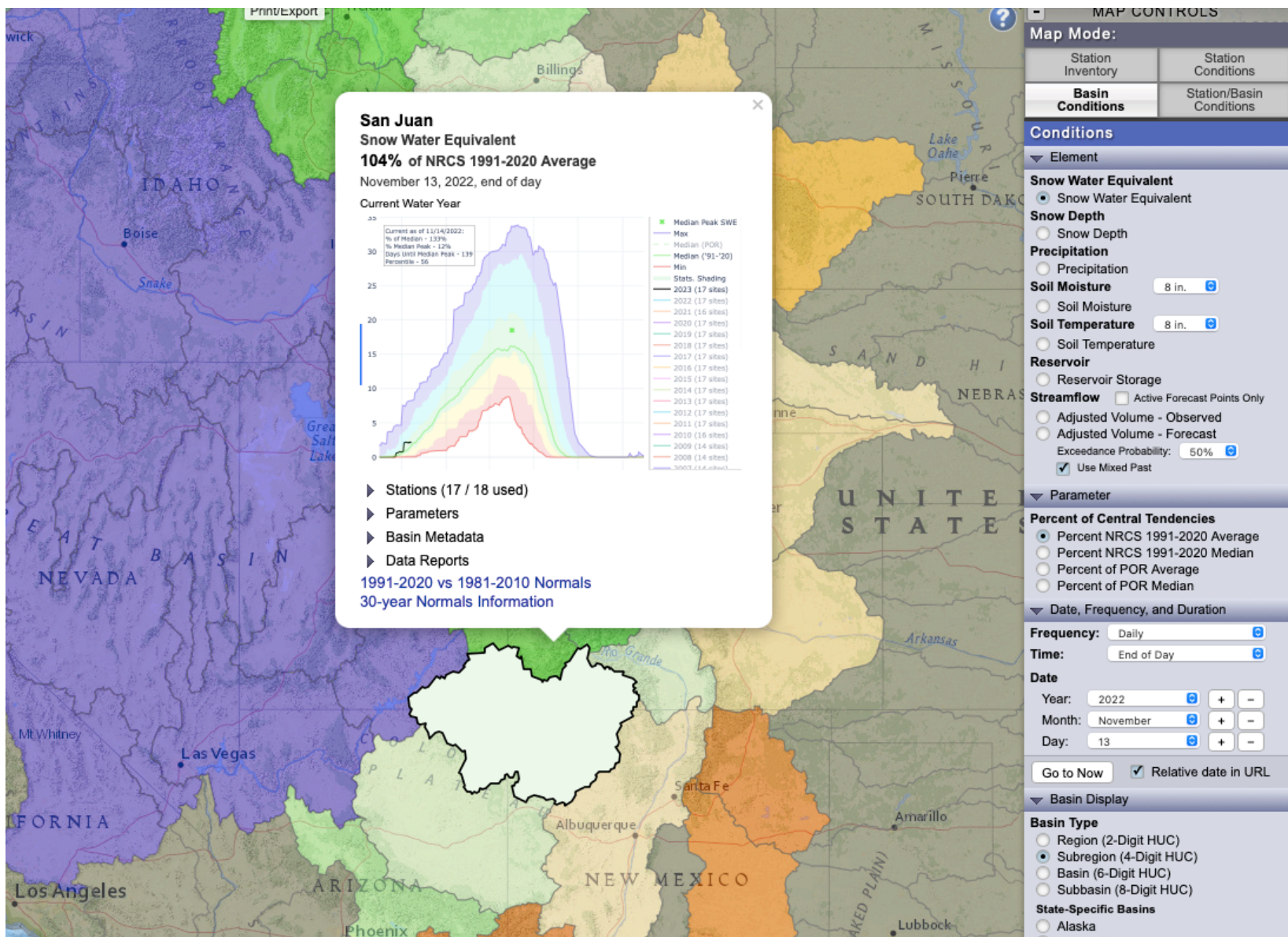
USDA Natural Resources Conservation Service United States Department of Agriculture



Created 11-14-2022

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





Click on a station or basin in the interactive map to see the time series graphic!

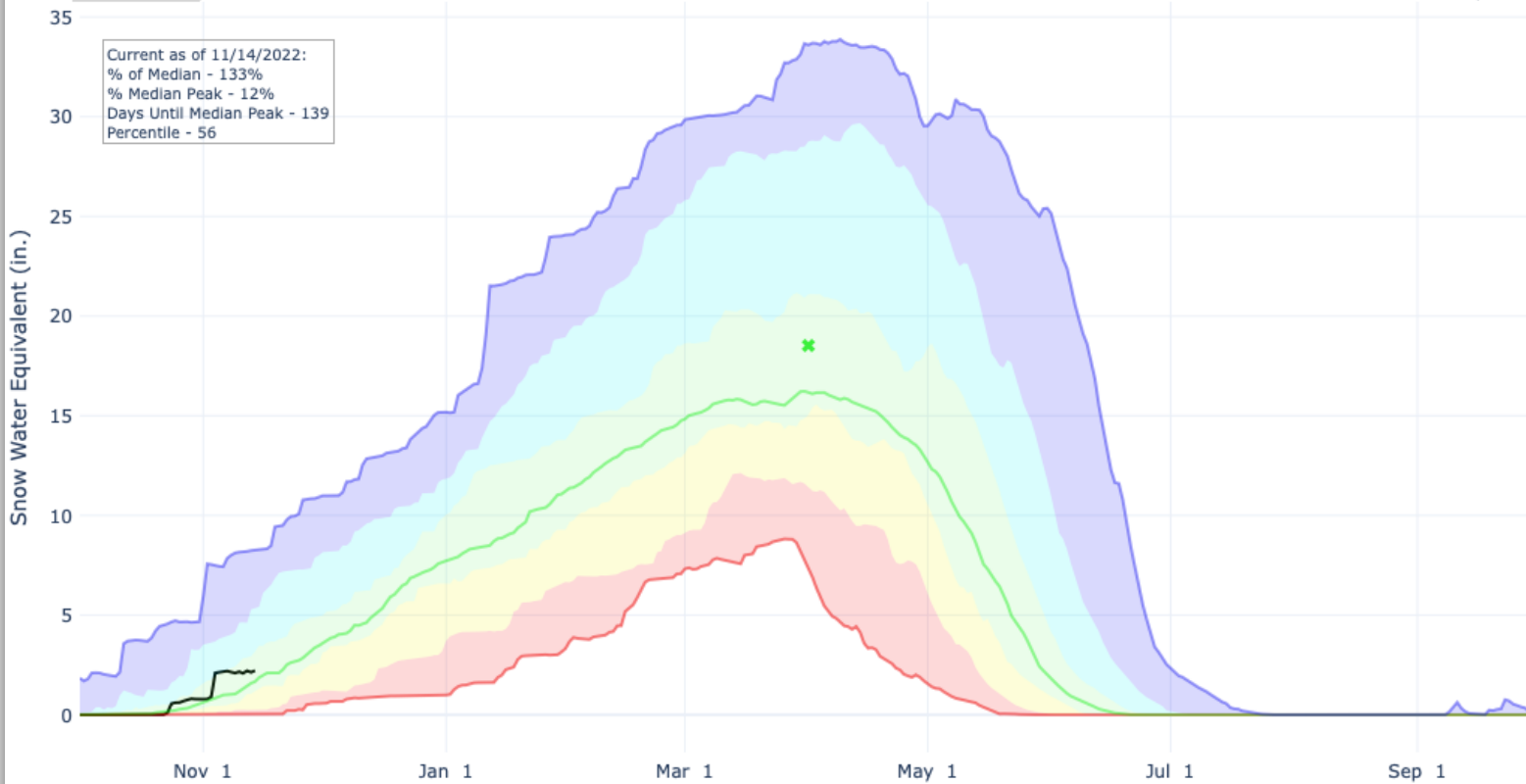


SNOW WATER EQUIVALENT IN SAN JUAN

Reset Range

[Link to data: CSV / JSON](#)

Station List



- * Median Peak SWE
- Max
- Median (POR)
- Median ('91-'20)
- Min
- Stats. Shading
- 2023 (17 sites)
- 2022 (17 sites)
- 2021 (16 sites)
- 2020 (17 sites)
- 2019 (17 sites)
- 2018 (17 sites)
- 2017 (17 sites)
- 2016 (17 sites)
- 2015 (17 sites)
- 2014 (17 sites)
- 2013 (17 sites)
- 2012 (17 sites)
- 2011 (16 sites)
- 2010 (16 sites)
- 2009 (14 sites)
- 2008 (14 sites)
- 2007 (14 sites)
- 2006 (14 sites)
- 2005 (14 sites)
- 2004 (13 sites)



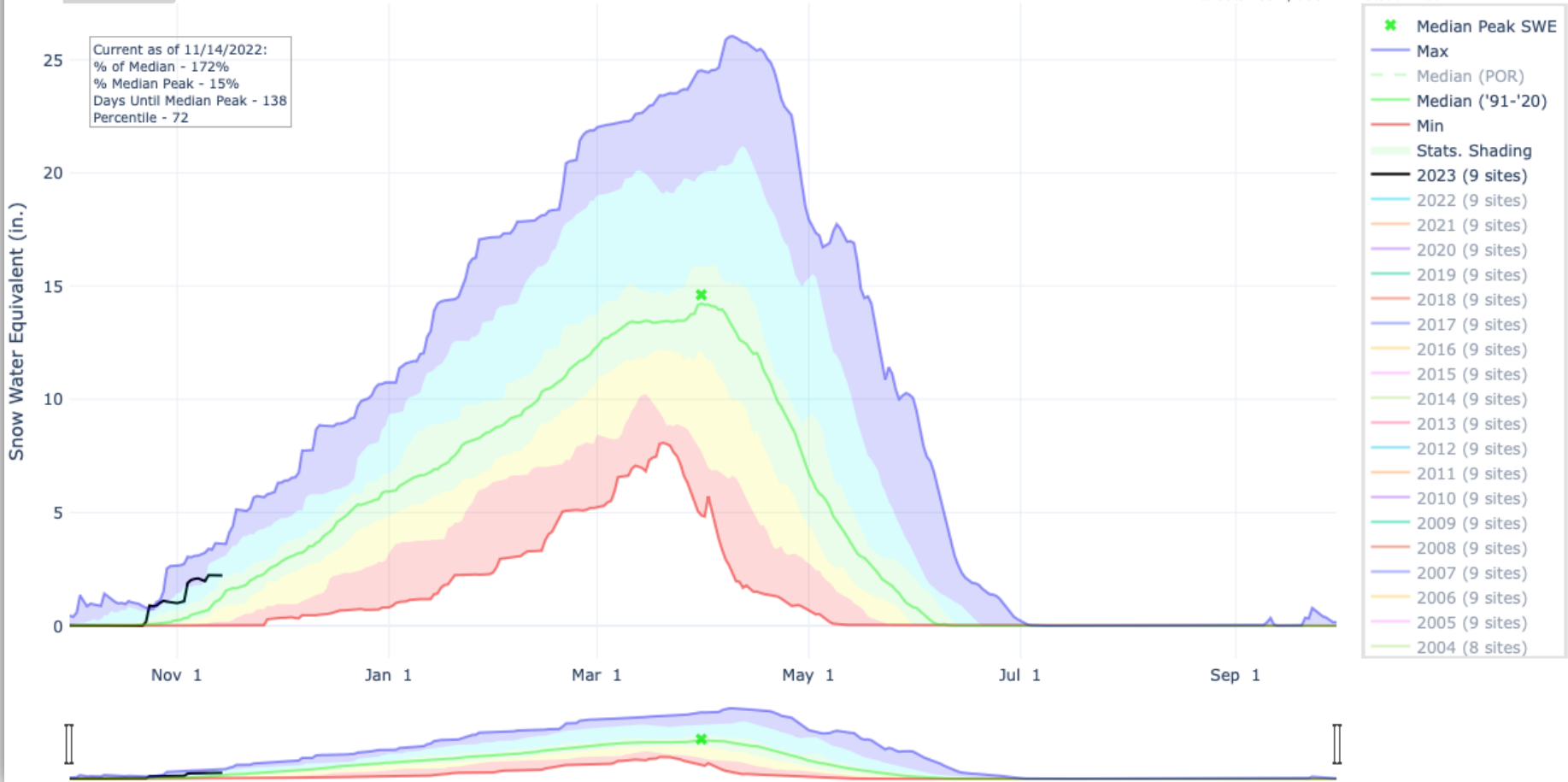
SNOW WATER EQUIVALENT IN UPPER COLORADO-DOLORES

Reset Range

[Link to data: CSV / JSON](#)

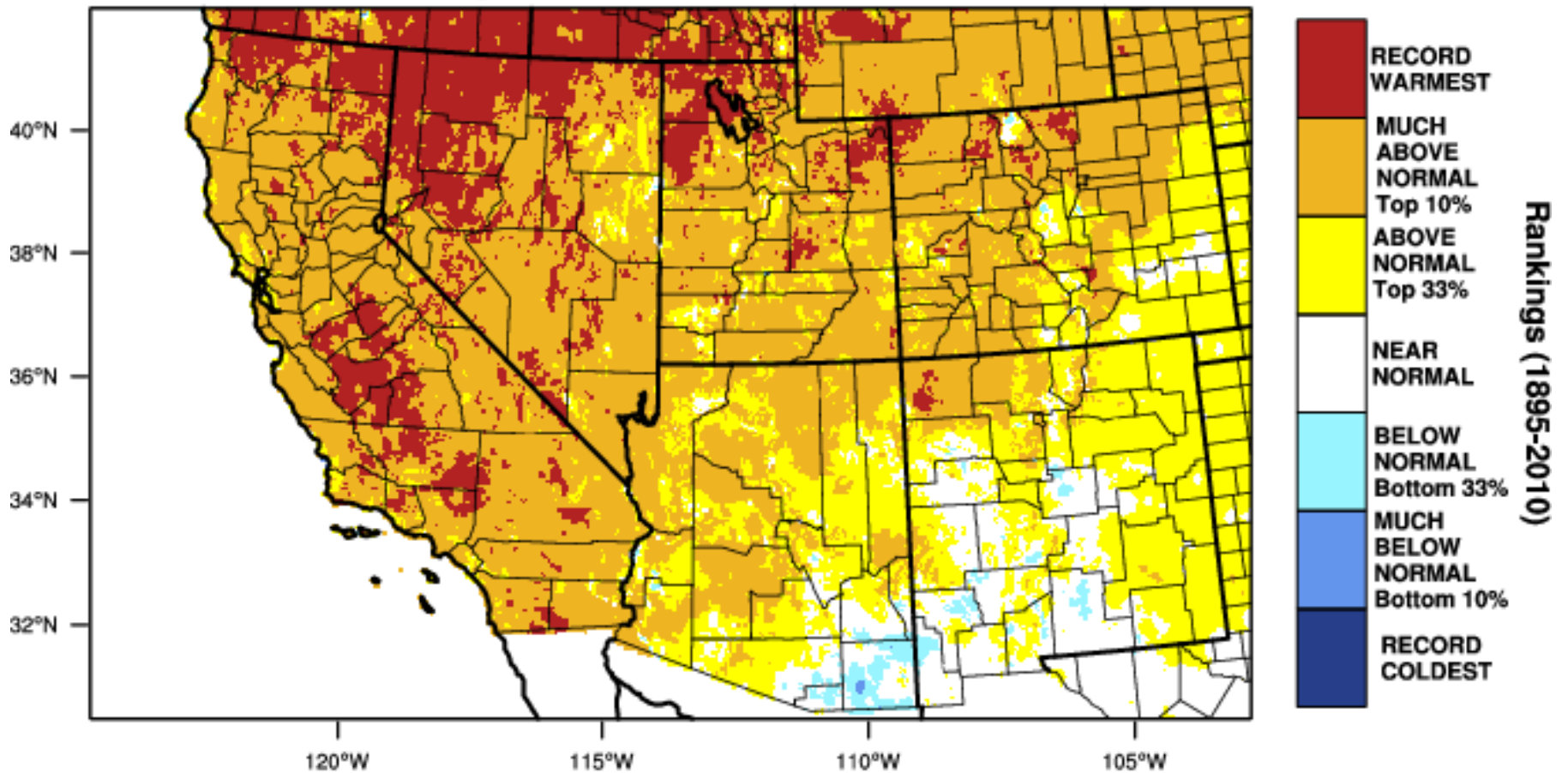
[Station List](#)

Current as of 11/14/2022:
% of Median - 172%
% Median Peak - 15%
Days Until Median Peak - 138
Percentile - 72



Southwest - Mean Temperature

August-October 2022 Percentile



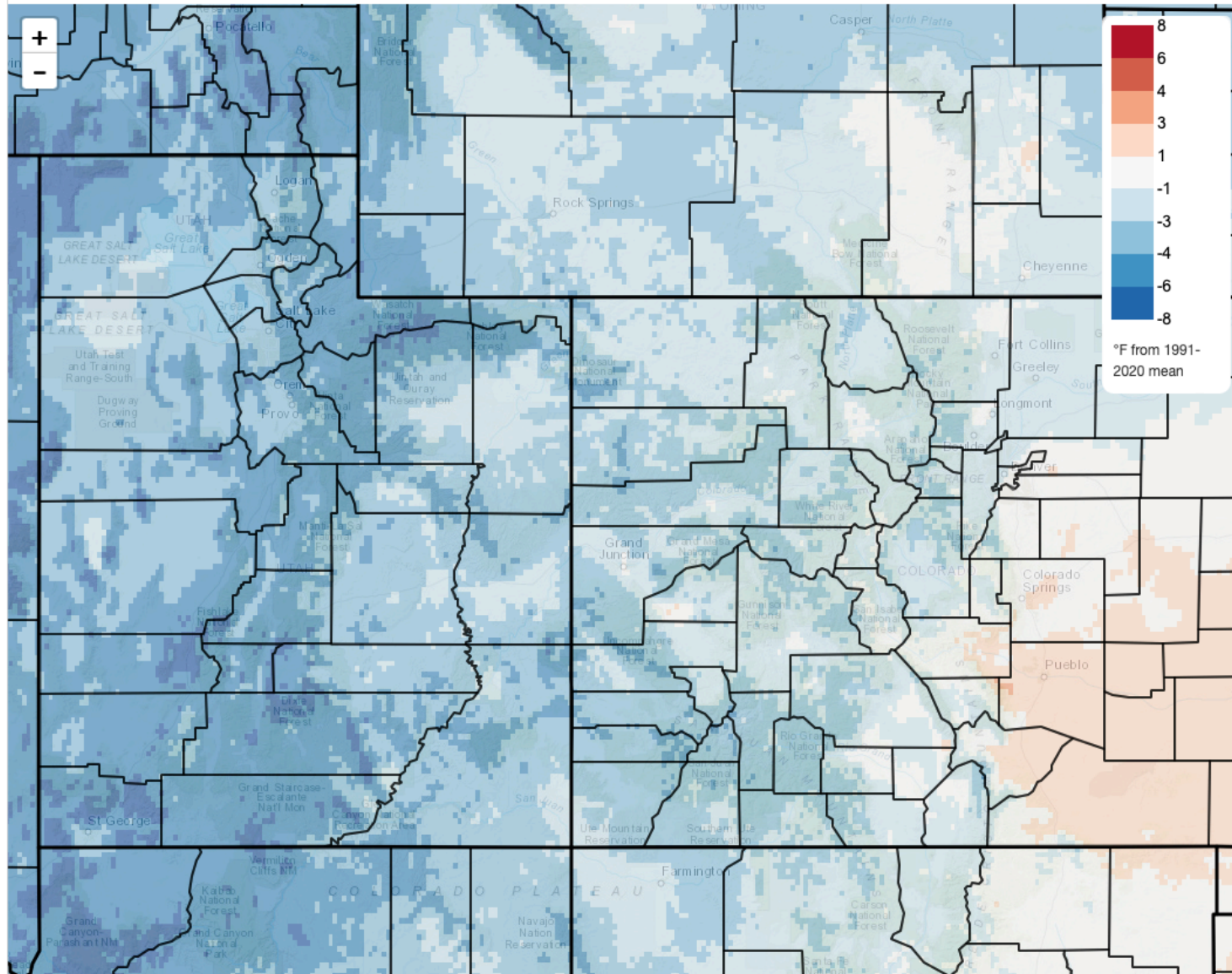
WestWide Drought Tracker - U Idaho/WRCC Data Source - PRISM (Prelim), created 11 NOV 2022

<https://wrcc.dri.edu/wwdt/index.php?region=sw>



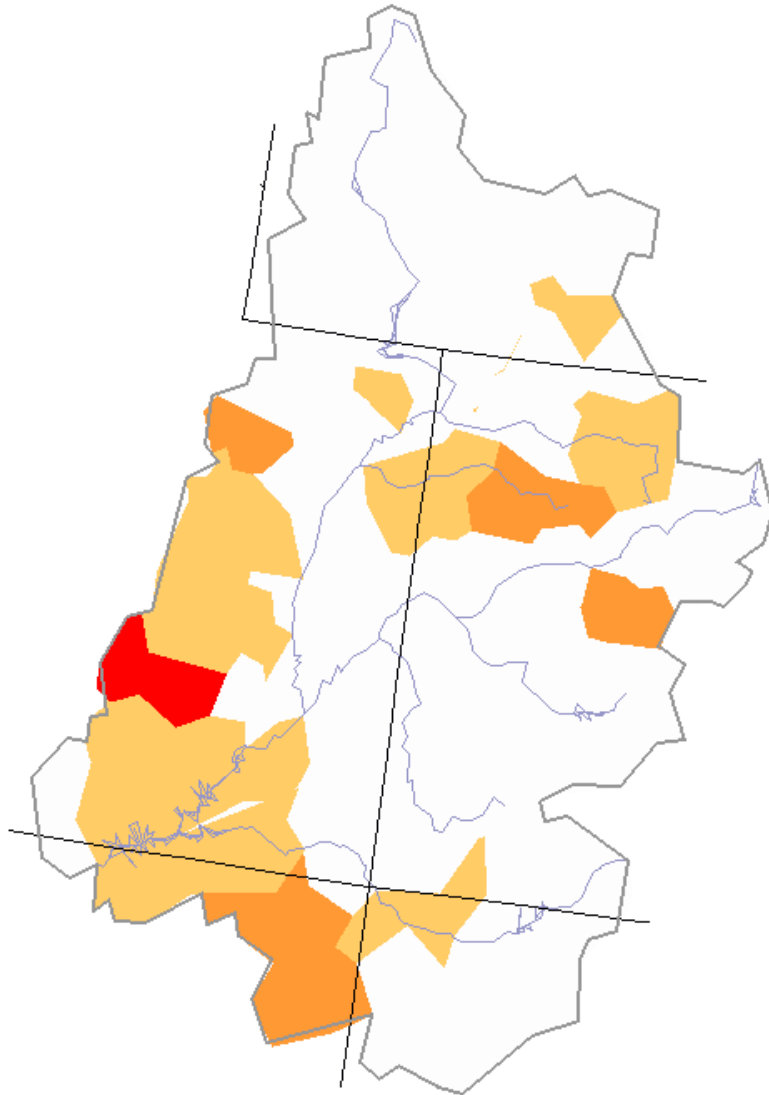
Mean Daily Temperature Anomaly, Last 15 Days

2022/10/29 - 2022/11/12



<https://climatetoolbox.org/tool/climate-mapper>





28-day averaged low streamflows

Explanation - Percentile classes			
Low	≤ 5	6-9	10-24
Extreme hydrologic drought	Severe hydrologic drought	Moderate hydrologic drought	Below normal



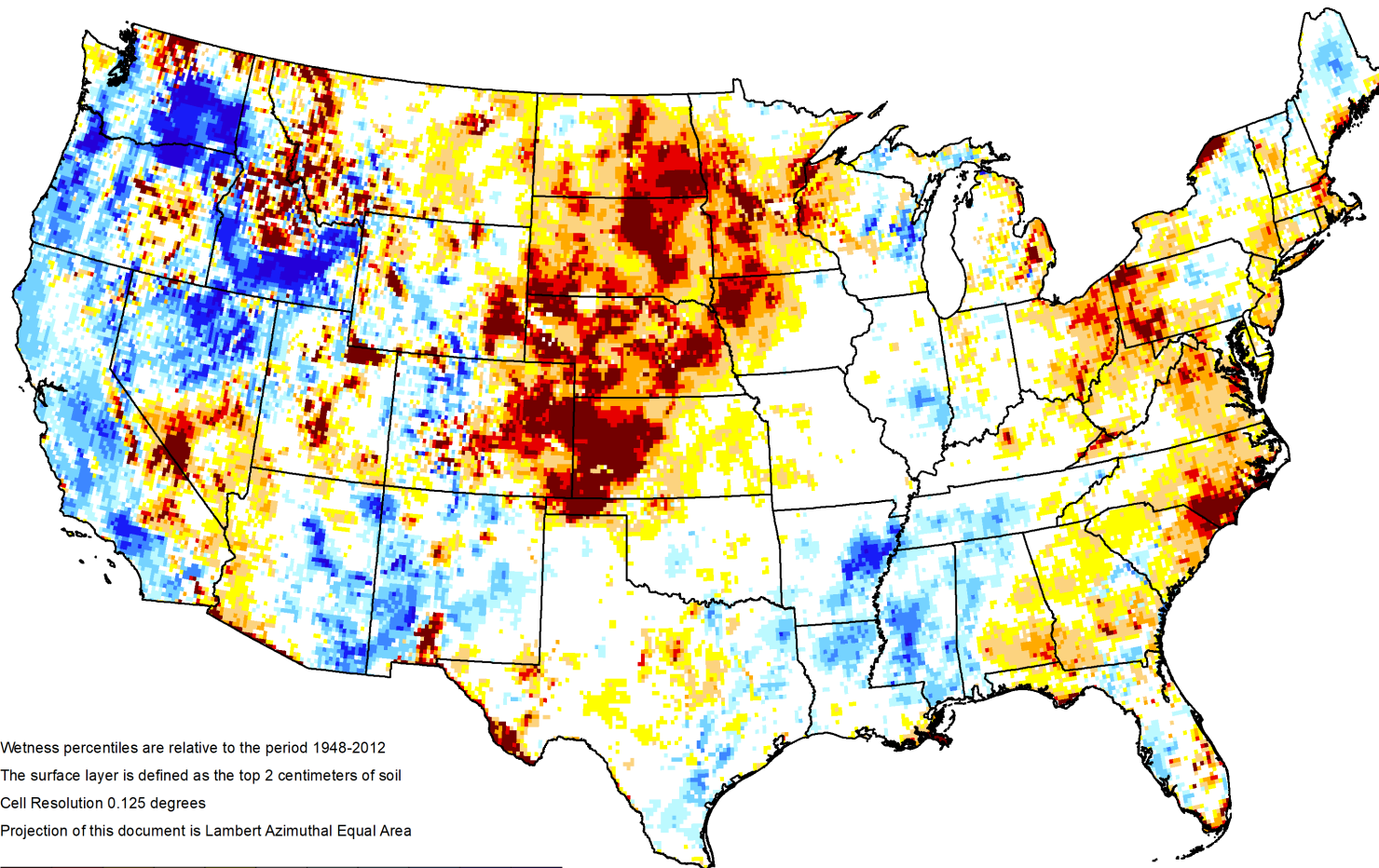
<https://waterwatch.usgs.gov/>





GRACE-Based Surface Soil Moisture Drought Indicator

November 07, 2022



Wetness percentiles are relative to the period 1948-2012
The surface layer is defined as the top 2 centimeters of soil
Cell Resolution 0.125 degrees
Projection of this document is Lambert Azimuthal Equal Area



<https://nasagrace.unl.edu>

[NASA's GRACE](#) has soil moisture and groundwater estimates



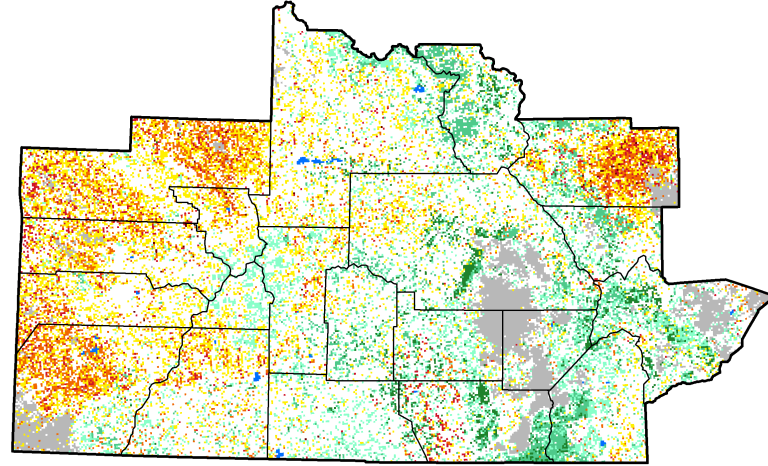
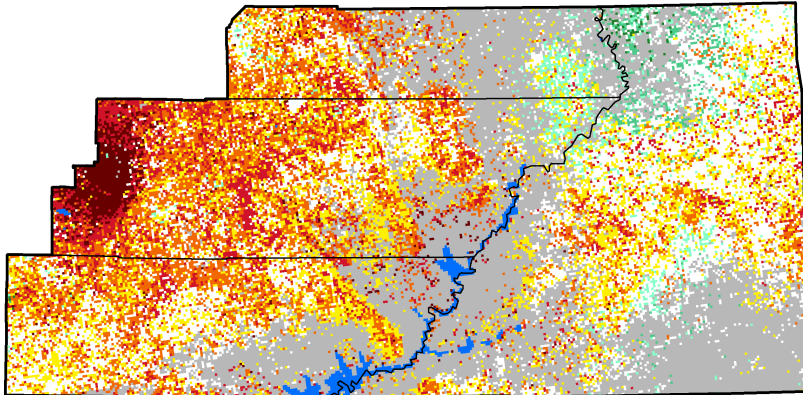
Vegetation Drought Response Index

November 6, 2022

Complete: Colorado, Region 4

Vegetation Drought Response Index

Complete: Utah, Region 3



Vegetation Condition

- Extreme Drought
- Severe Drought
- Moderate Drought
- Pre-drought stress
- Near Normal
- Unusually Moist
- Very Moist
- Extreme Moist
- Out of Season
- Water

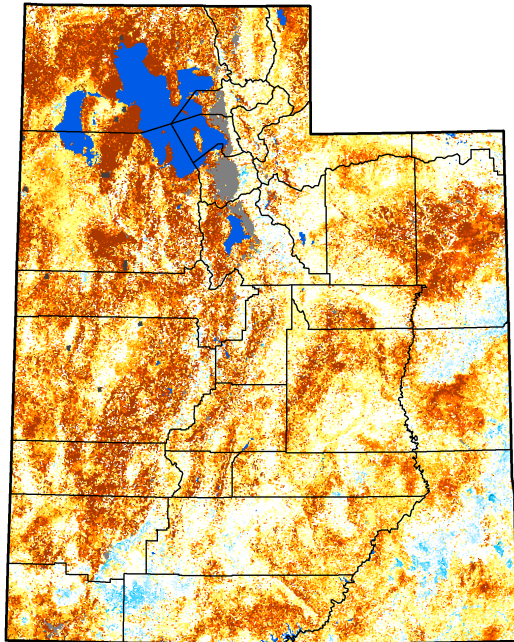


<https://veg dri.unl.edu>



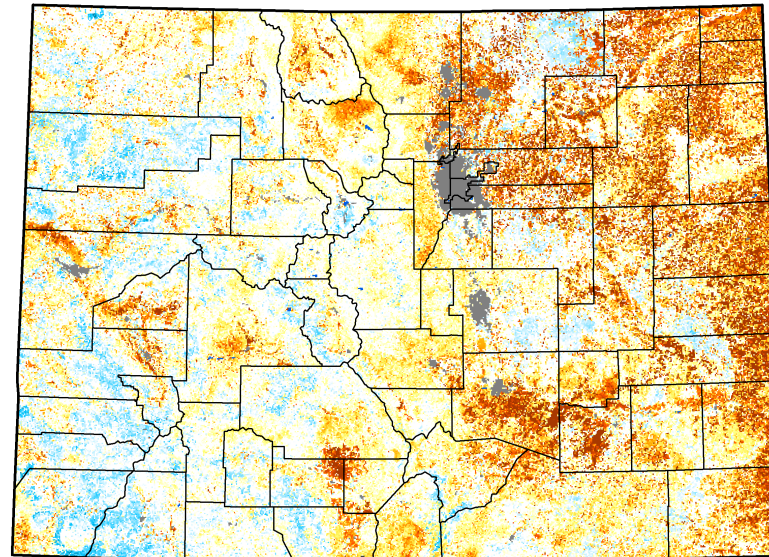
Quick Drought Response Index

Utah



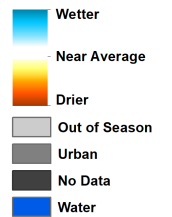
Quick Drought Response Index

Colorado



November 6, 2022
(Week 45)

Conditions Relative to
4-Week Historical Average



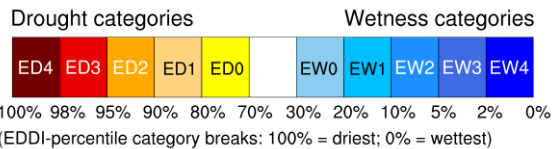
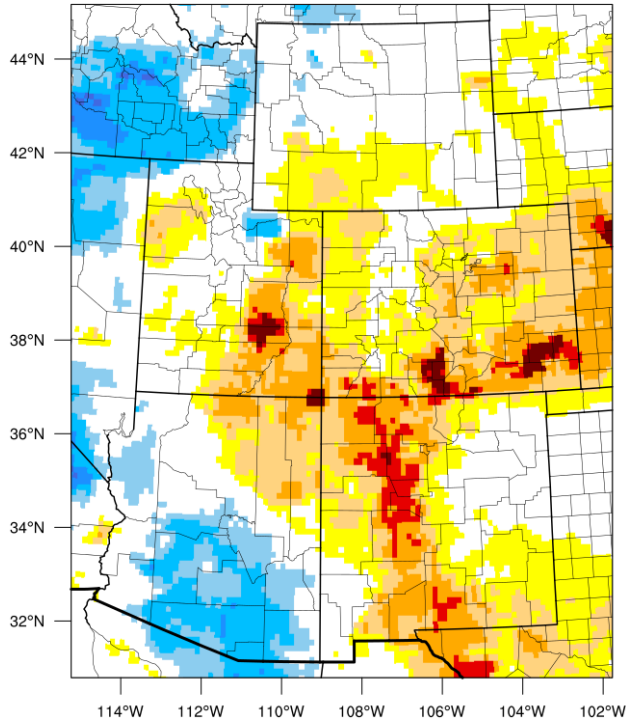
CALMIT
University of Nebraska - Lincoln
Center for Advanced Land Management and Decision Technologies



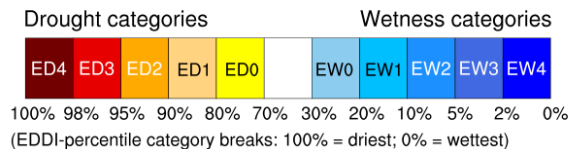
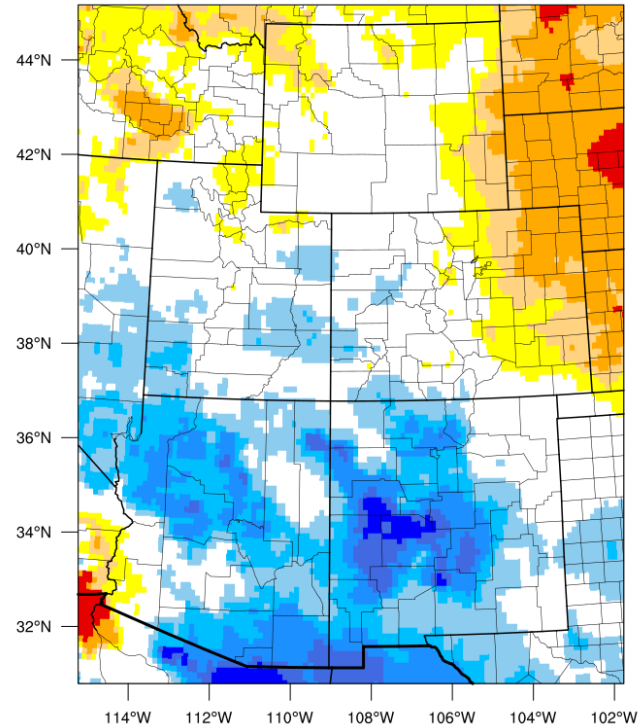
<https://quickdri.unl.edu>



1-week EDDI categories for November 10, 2022



3-month EDDI categories for November 10, 2022



<https://psl.noaa.gov/eddi/>

What happens in the atmosphere is as important as what's happening on the ground!

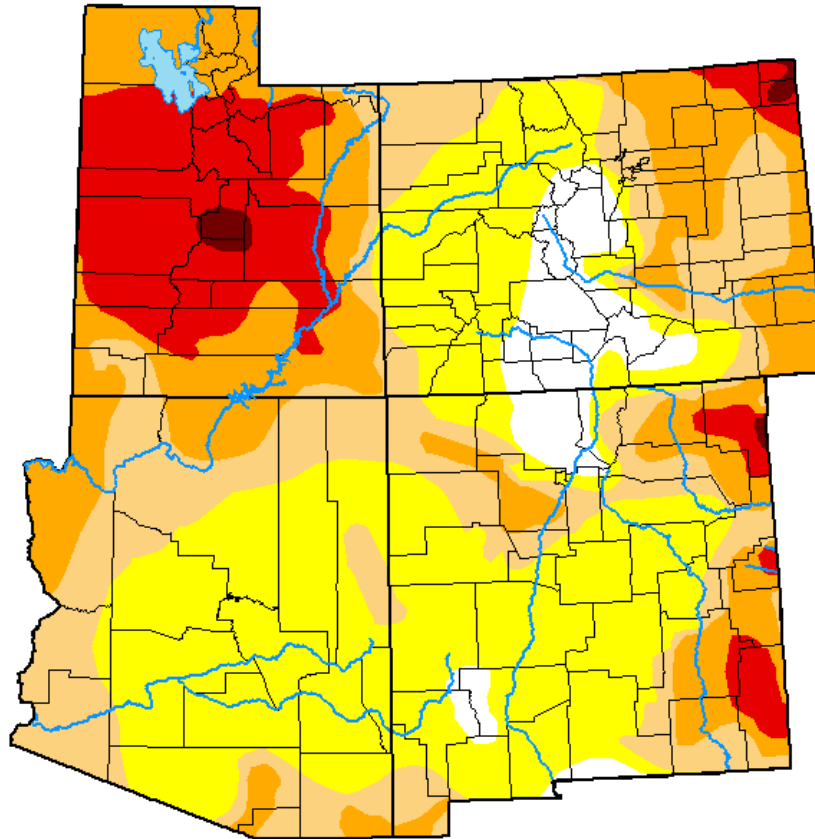
EDDI looks at temperature, humidity, solar radiation, and wind, and compares current conditions to that same time period in history.

When the atmosphere is more “thirsty” it tries to take more water from the ground.



U.S. Drought Monitor Four Corners (States)

November 8, 2022
(Released Thursday, Nov. 10, 2022)
Valid 7 a.m. EST



Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	6.08	93.92	56.03	33.42	12.56	0.57
Last Week 11-01-2022	6.08	93.92	55.94	31.54	12.52	0.57
3 Months Ago 08-09-2022	2.19	97.81	85.08	59.93	28.58	1.90
Start of Calendar Year 01-04-2022	0.00	100.00	86.39	63.92	19.61	0.00
Start of Water Year 09-27-2022	4.07	95.93	68.40	36.90	14.19	0.87
One Year Ago 11-09-2021	1.12	98.88	82.39	52.00	23.03	1.94

Intensity:

- None
- D0 Abnormally Dry
- D1 Moderate Drought
- D2 Severe Drought
- D3 Extreme Drought
- D4 Exceptional Drought

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



Key Takeaways

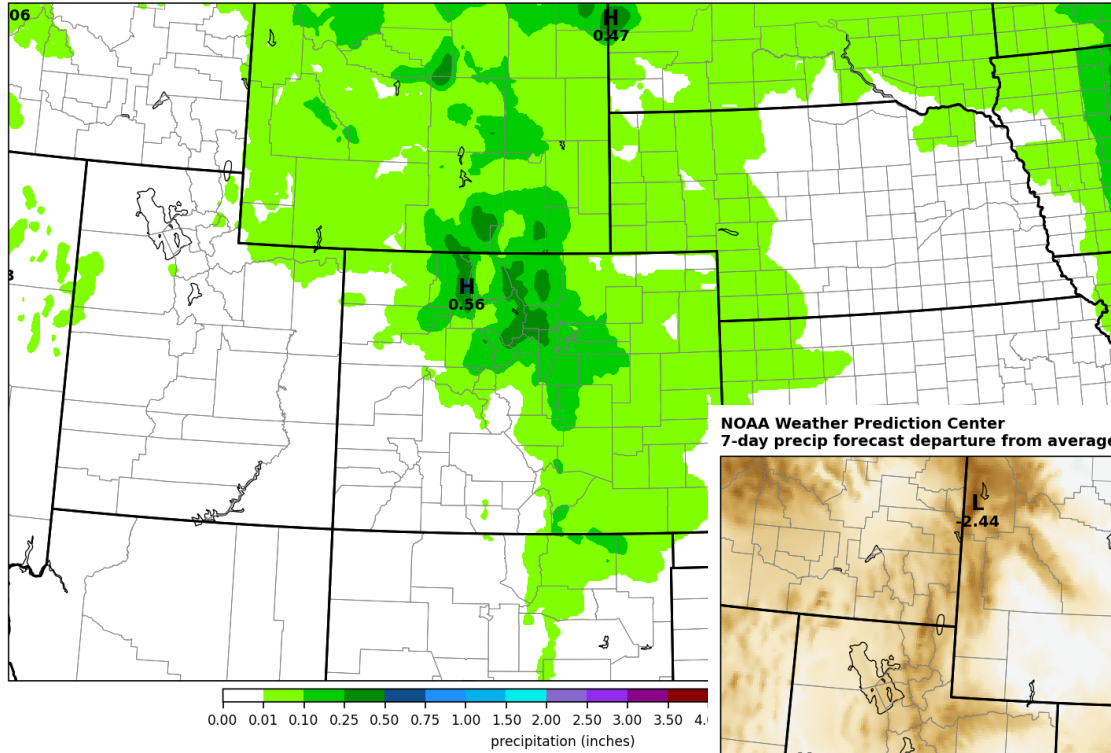
- ❑ Good monsoon moisture and a decent start to the snowpack season has helped improve soil moisture conditions
- ❑ Temperatures have been warm, but overall, evaporative demand has been lower than average
- ❑ Vegetation, soils are okay. Could be better, but is better than it's been in recent years
- ❑ Long-term hydrologic drought is still evident in streamflows
- ❑ Overall drought improvement has occurred throughout the summer and fall



Outlook

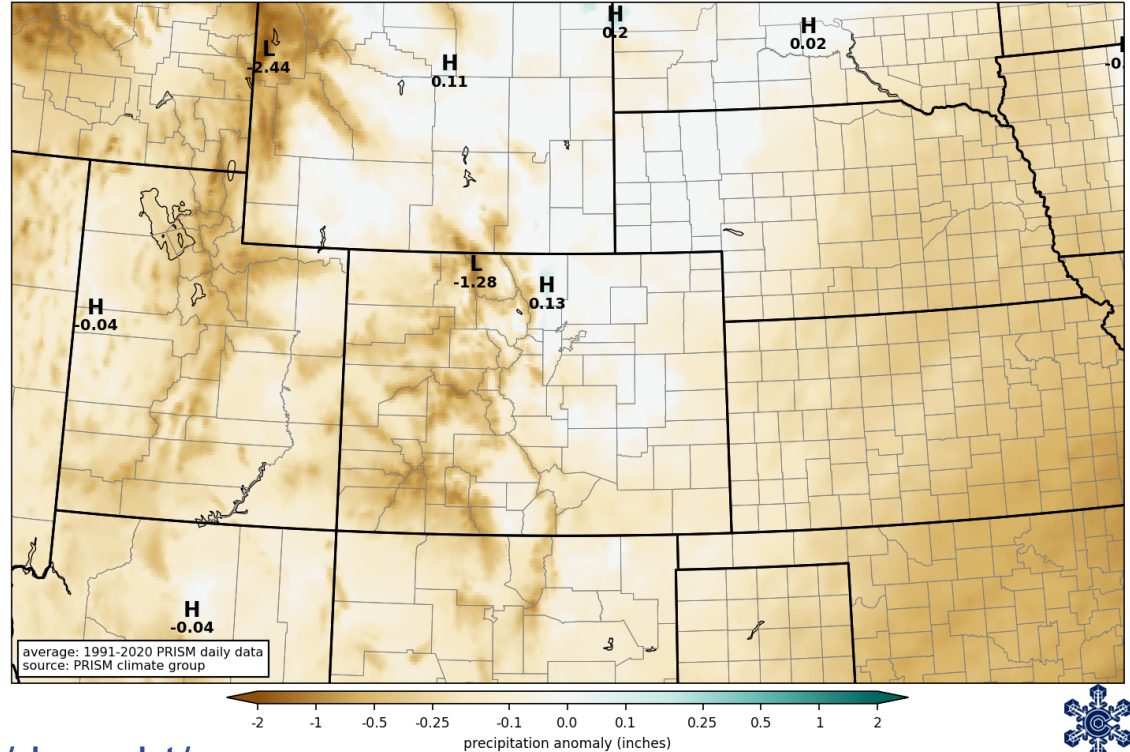
**NOAA Weather Prediction Center
7-day precipitation forecast**

forecast issued 1200 UTC Tue 15 Nov 2022
precipitation in 168 hrs ending 1200 UTC Tue 22 Nov 2022



**NOAA Weather Prediction Center
7-day precip forecast departure from average**

forecast issued 1200 UTC Tue 15 Nov 2022
precipitation in 168 hrs ending 1200 UTC Tue 22 Nov 2022

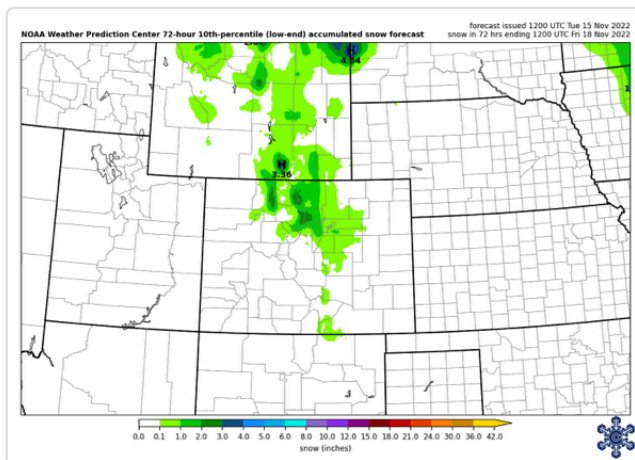


<https://climate.colostate.edu/drought/>

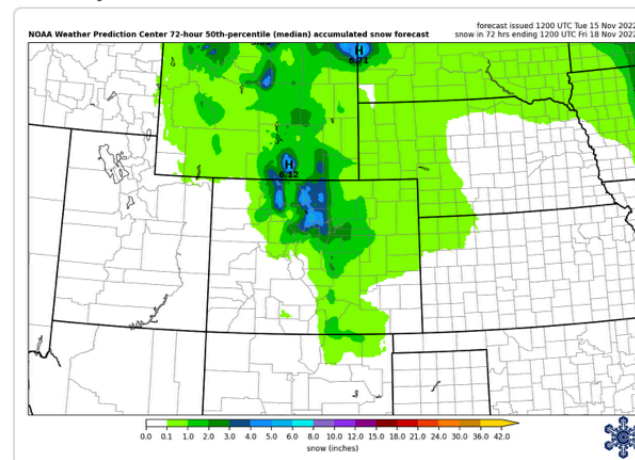


72-hour snowfall accumulation

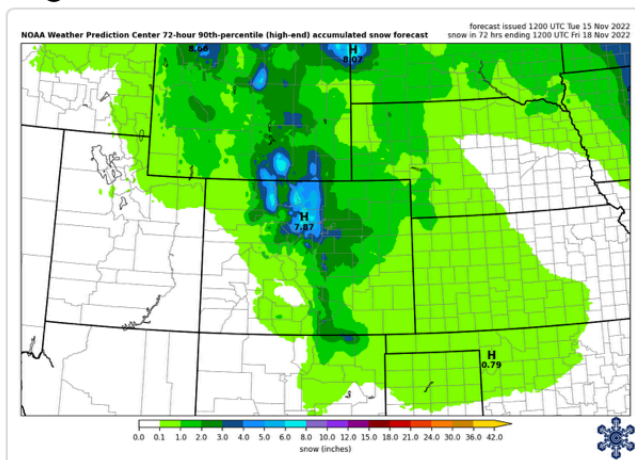
Low end amounts



Likely amounts



High end amounts

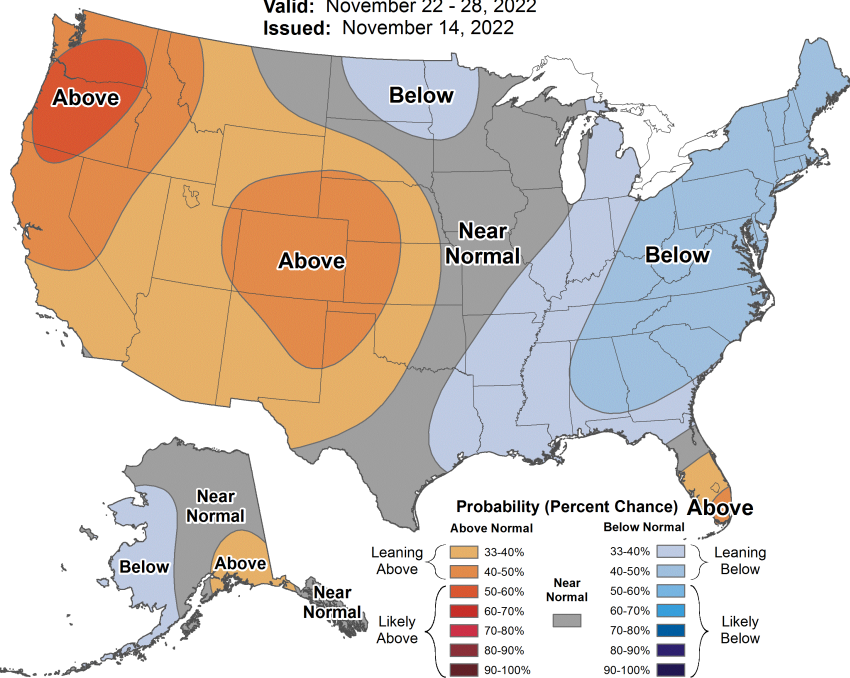




8-14 Day Temperature Outlook



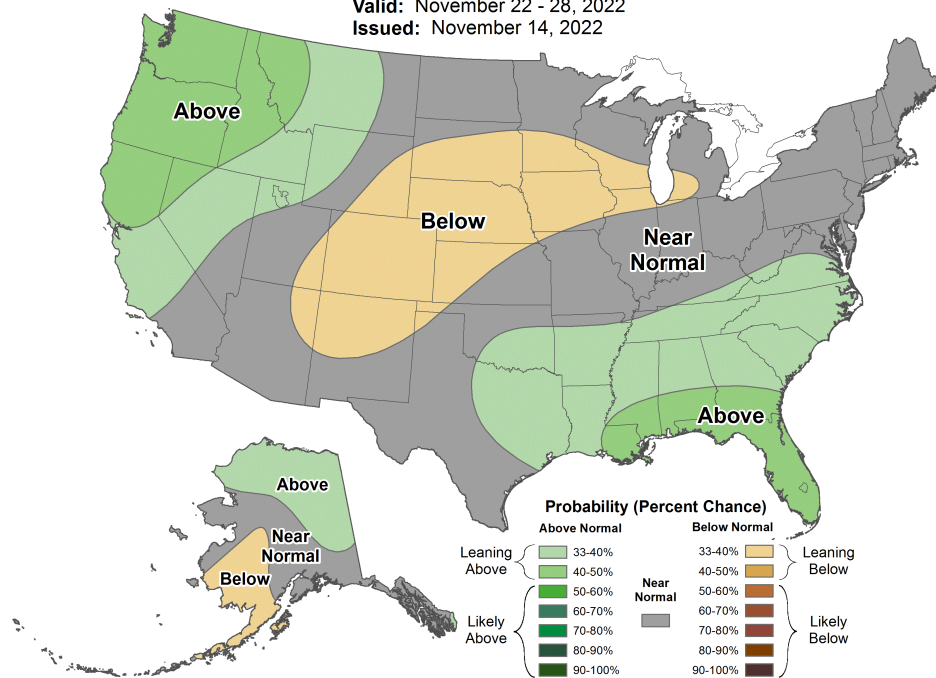
Valid: November 22 - 28, 2022
Issued: November 14, 2022



8-14 Day Precipitation Outlook



Valid: November 22 - 28, 2022
Issued: November 14, 2022



<https://www.cpc.ncep.noaa.gov>

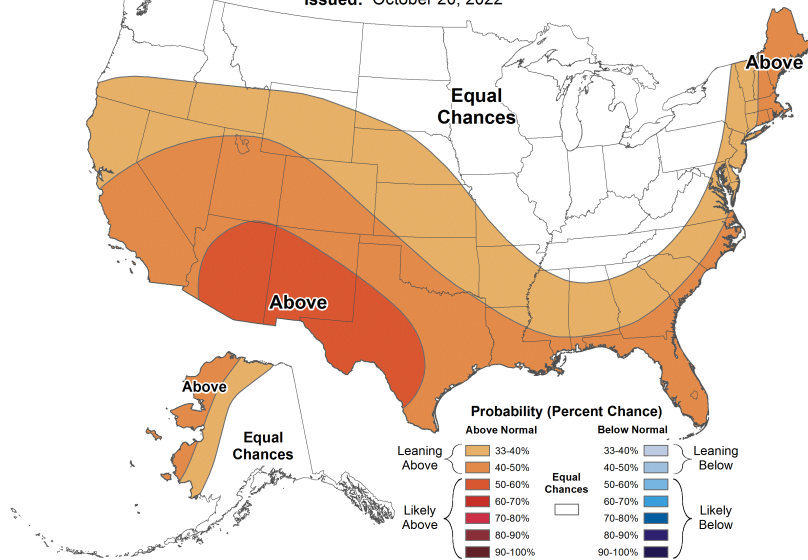




Seasonal Temperature Outlook



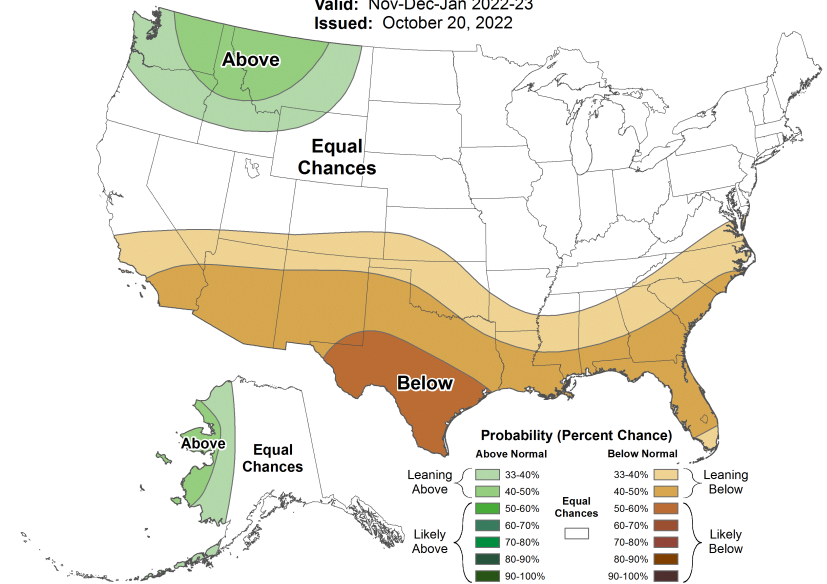
Valid: Nov-Dec-Jan 2022-23
Issued: October 20, 2022



Seasonal Precipitation Outlook



Valid: Nov-Dec-Jan 2022-23
Issued: October 20, 2022



<https://www.cpc.ncep.noaa.gov>



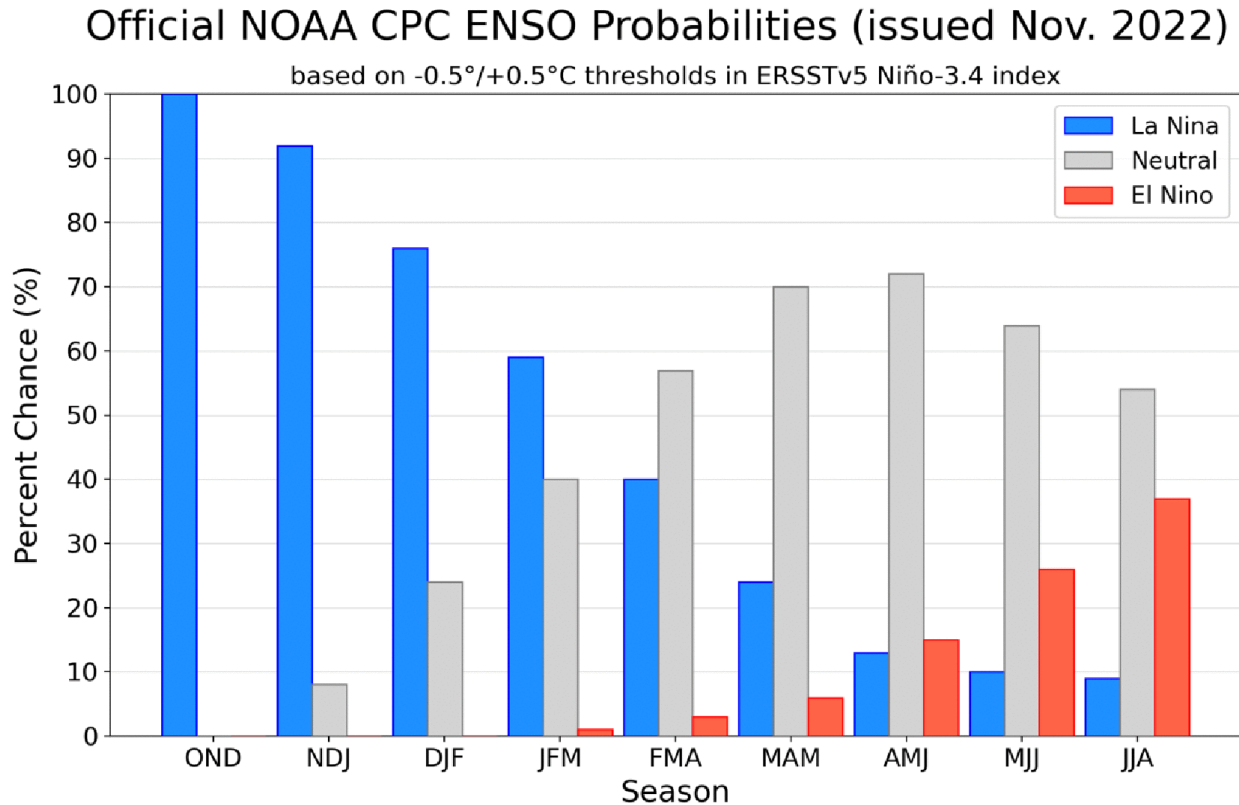


Figure 7. Official ENSO probabilities for the Niño 3.4 sea surface temperature index (5°N - 5°S , 120°W - 170°W). Figure updated 10 November 2022.

<https://iri.columbia.edu/our-expertise/climate/forecasts/enso/current/>



Key Takeaways

- ❑ Drier conditions look to dominate over the next couple of weeks.
- ❑ La Niña conditions will continue through the winter and into spring
- ❑ La Niña favors the northern mountains for winter snow, with less than average more likely over southern mountains (including San Juans)
- ❑ Warmer than average conditions are more likely as we head into winter

What to watch for

- ❑ Better soil conditions now should help during melting season
- ❑ It's still early, how will the season progress over the next 4 months?
- ❑ Near normal snowpack is good, but melting needs to be consistent and slow
- ❑ Early peak and early melt (like last year) will be rough on water supplies
- ❑ We need an above average peak snowpack to recover from long-term hydrologic drought conditions

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Thank you



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