

# **Arizona Climate Update: Where are we now and where are we headed?**

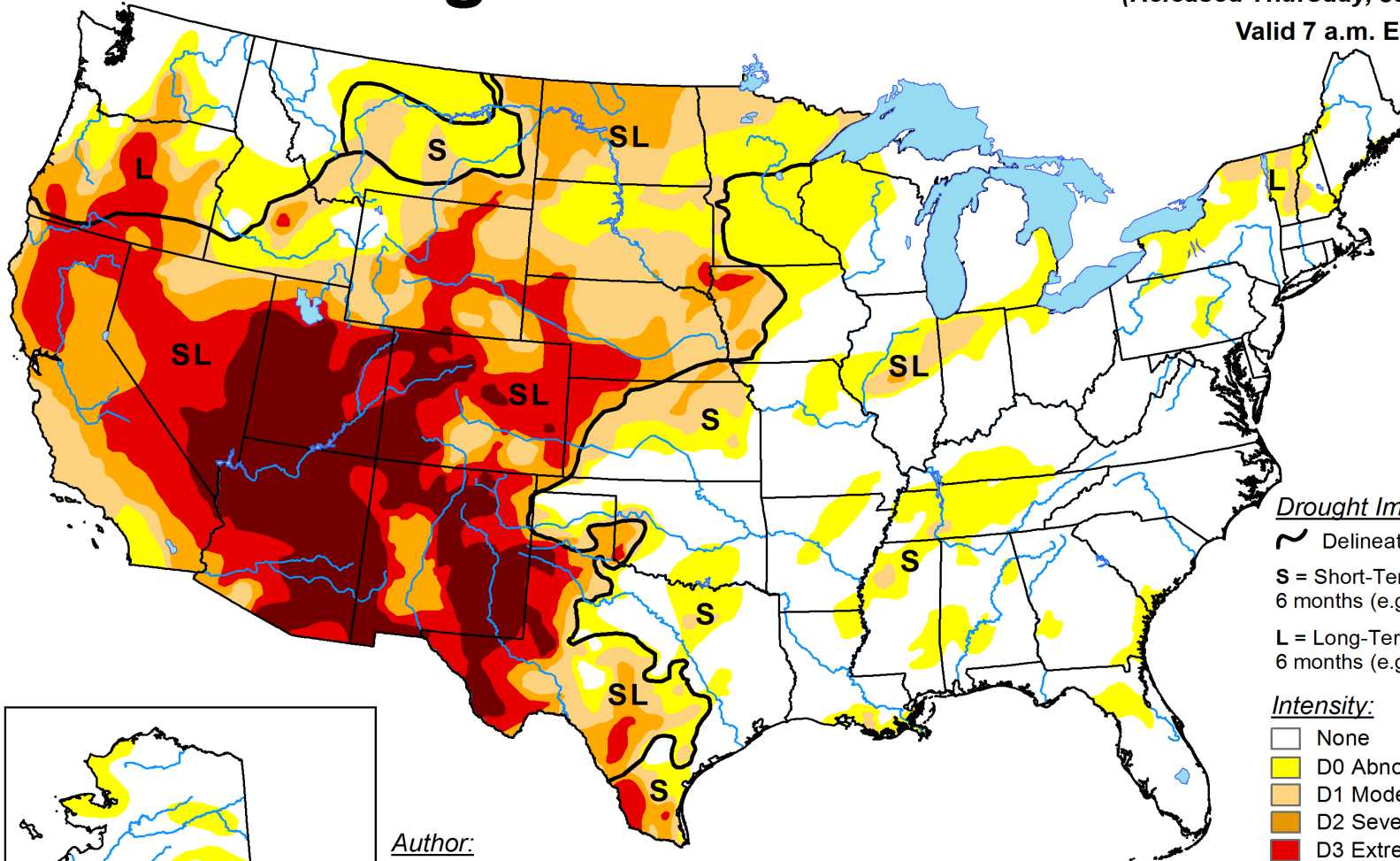
**Mike Crimmins  
Professor/Extension Specialist  
Dept. of Environmental Science &  
Cooperative Extension  
The University of Arizona**



# U.S. Drought Monitor

January 19, 2021  
(Released Thursday, Jan. 21, 2021)

Valid 7 a.m. EST



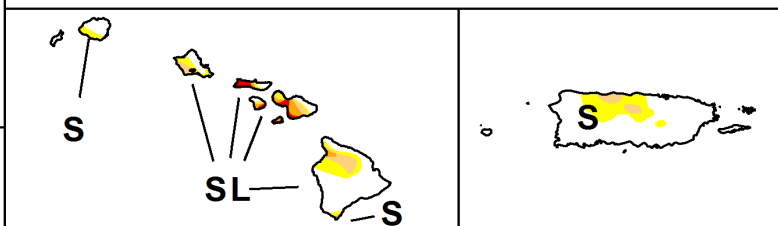
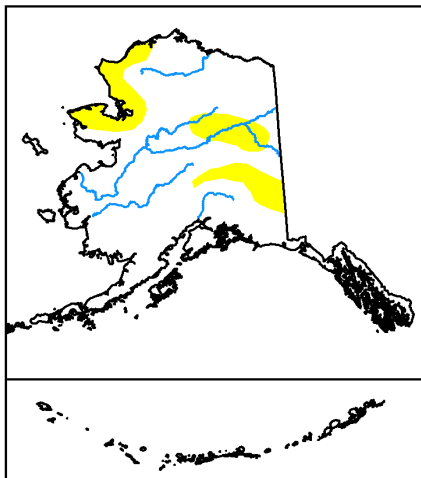
### Drought Impact Types:

- Delineates dominant impacts
- S** = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
- L** = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

### Intensity:

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

Author:  
Richard Tinker  
CPC/NOAA/NWS/NCEP



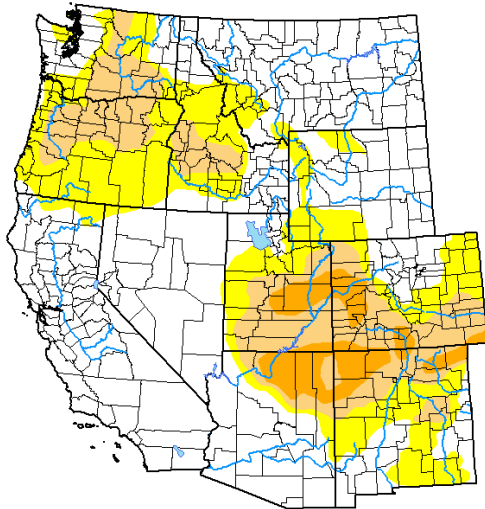
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

**U.S. Drought Monitor  
West**

**January 21, 2020**  
(Released Thursday, Jan. 23, 2020)  
Valid 7 a.m. EST



**Intensity:**

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

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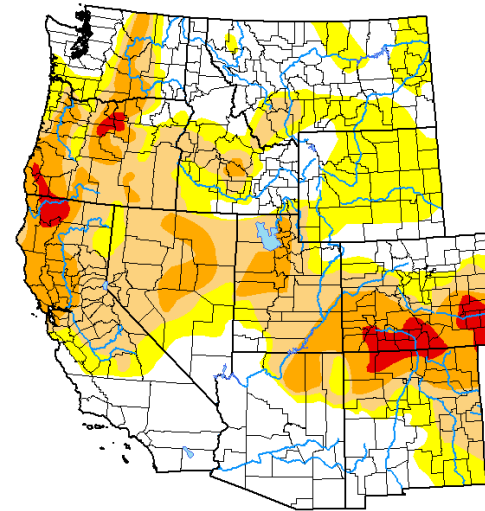
**Author:**  
Richard Heim  
NCEI/NOAA



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

**U.S. Drought Monitor  
West**

**June 2, 2020**  
(Released Thursday, Jun. 4, 2020)  
Valid 8 a.m. EDT



**Intensity:**

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

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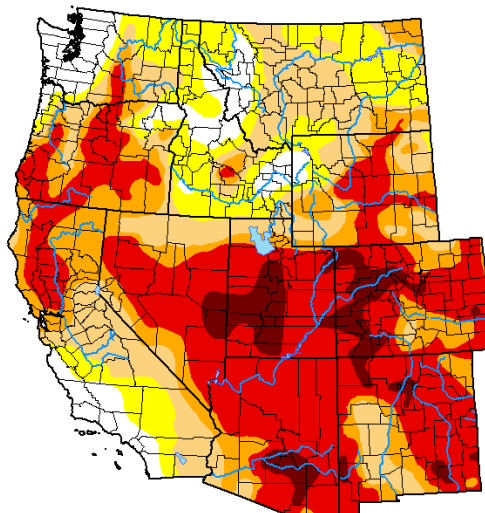
**Author:**  
Curtis Riganti  
National Drought Mitigation Center



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

**U.S. Drought Monitor  
West**

**October 27, 2020**  
(Released Thursday, Oct. 29, 2020)  
Valid 8 a.m. EDT



**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>

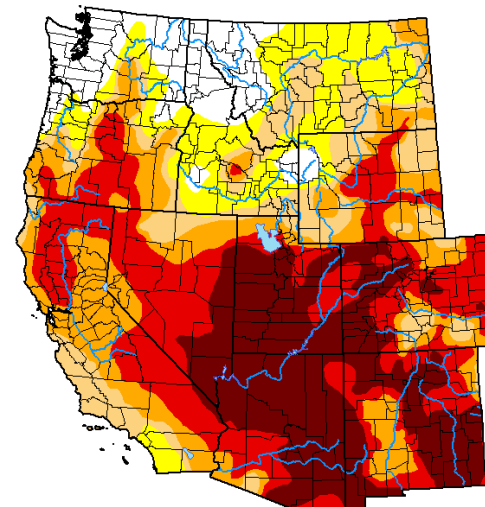
**Author:**  
David Miskus  
NOAA/NWS/NCEP/CPC



[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

**U.S. Drought Monitor  
West**

**January 19, 2021**  
(Released Thursday, Jan. 21, 2021)  
Valid 7 a.m. EST



**Intensity:**

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

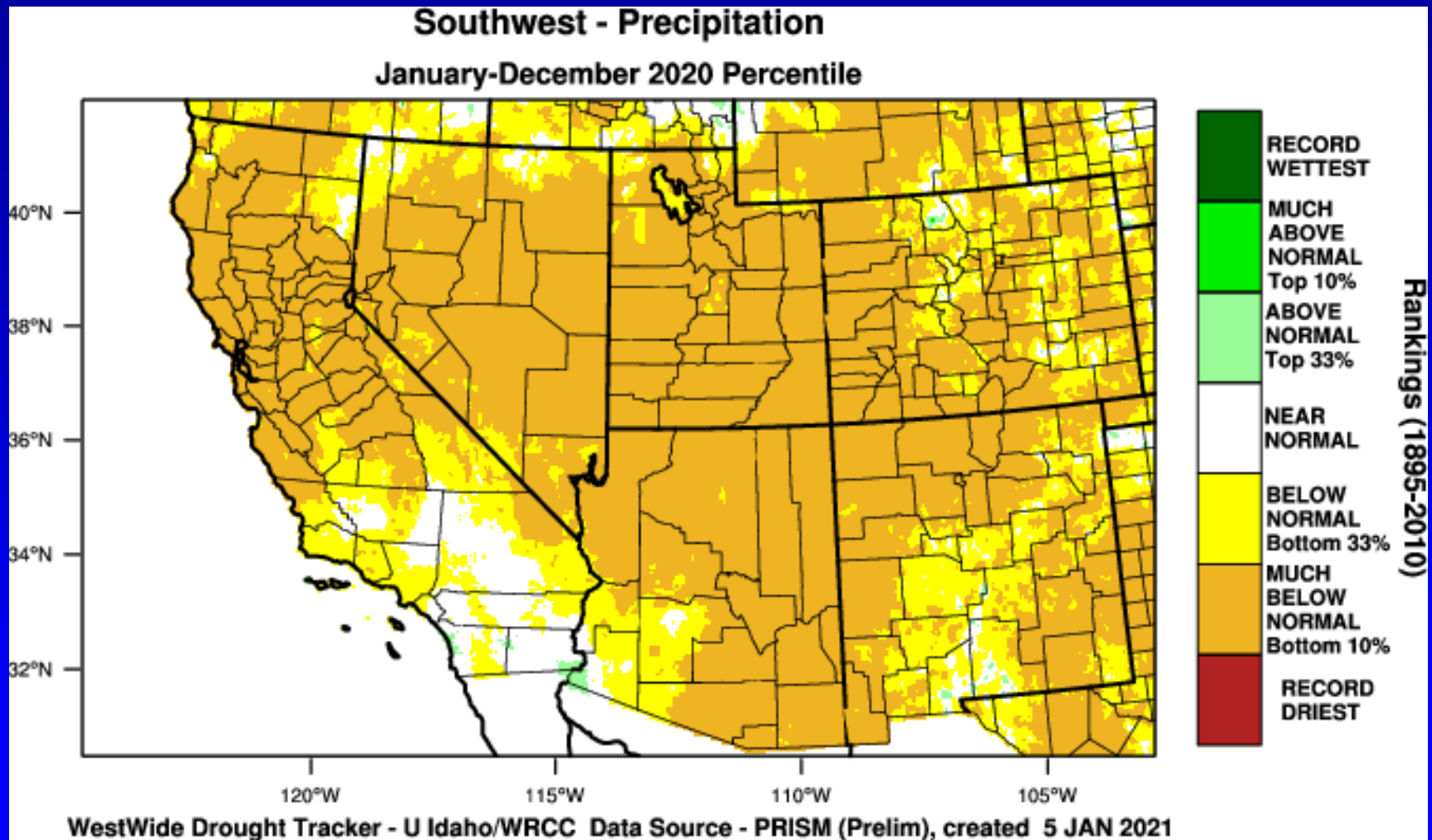
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**Author:**  
Richard Tinker  
CPC/NOAA/NWS/NCEP

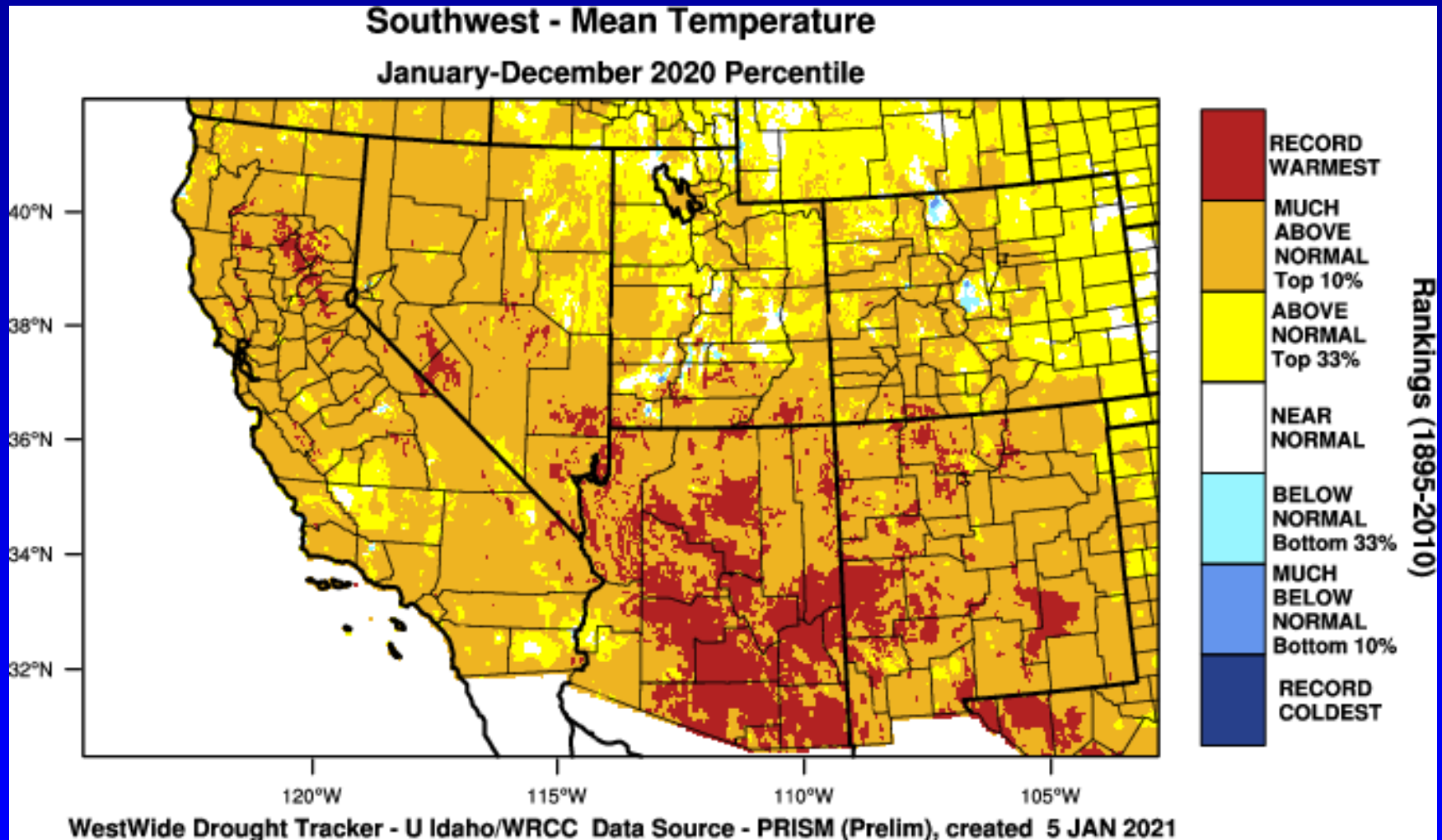


[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

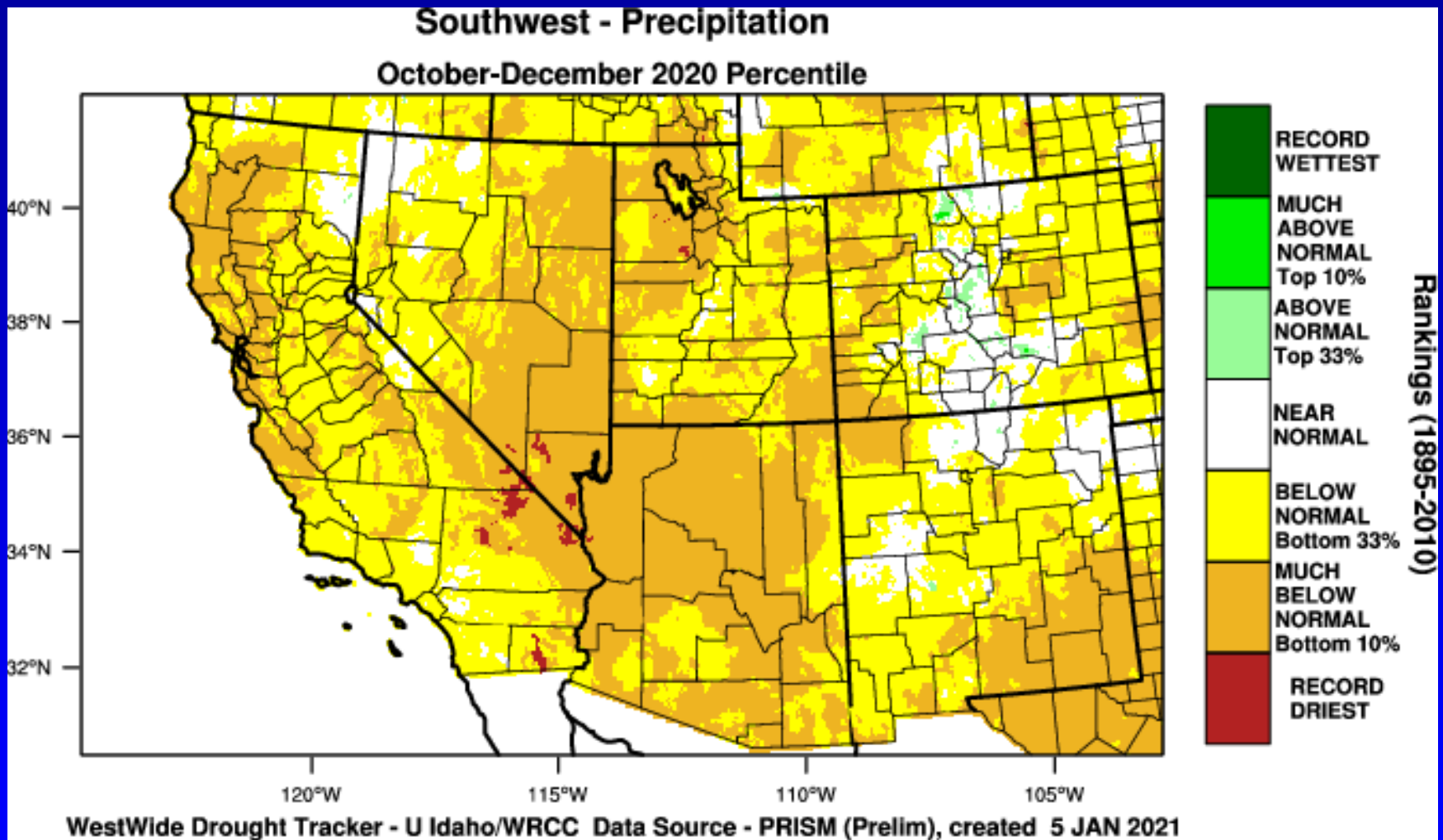
# Precipitation – last 12 months



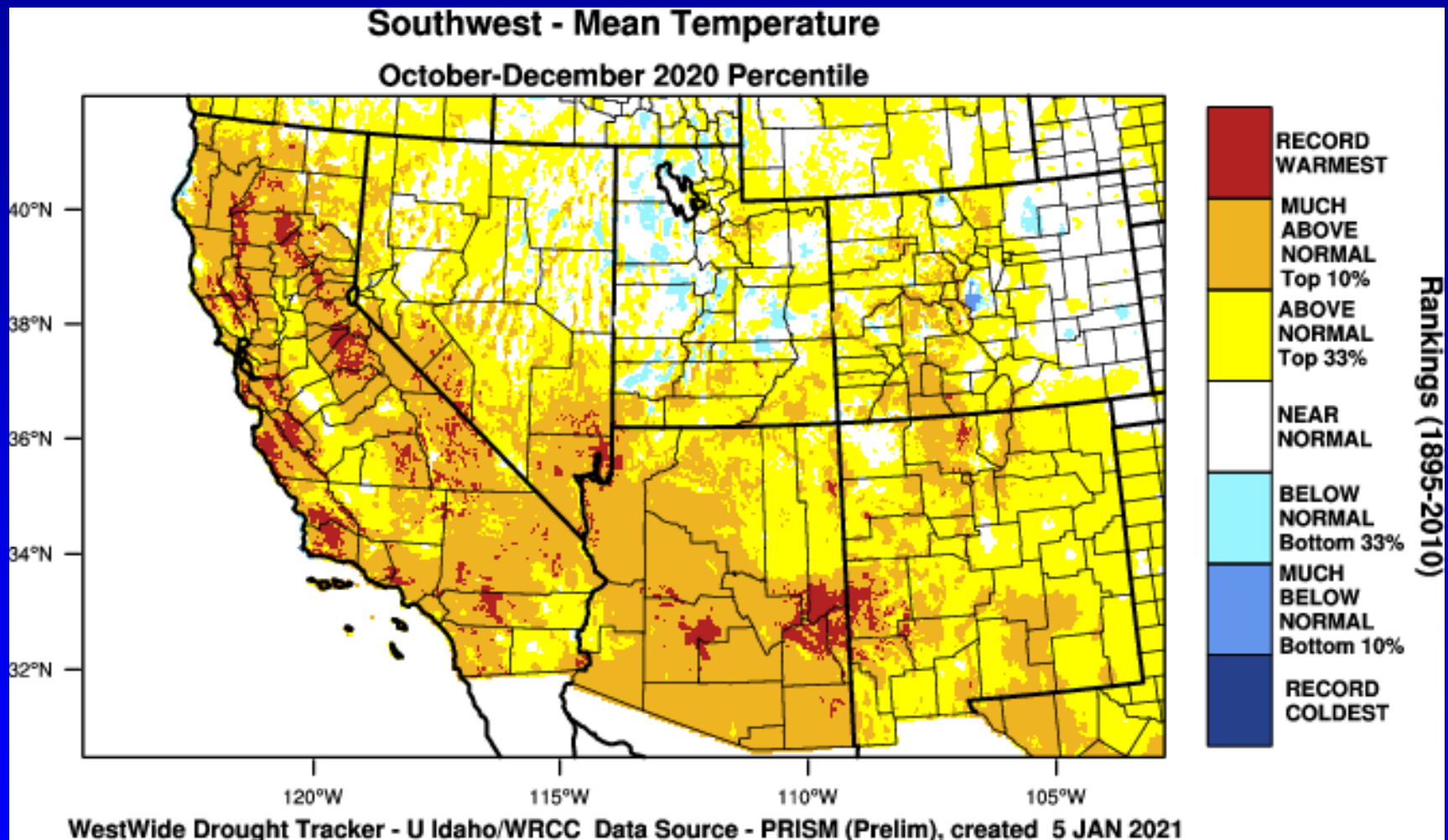
# Temperature – last 12 months



# Precipitation – last 3 months

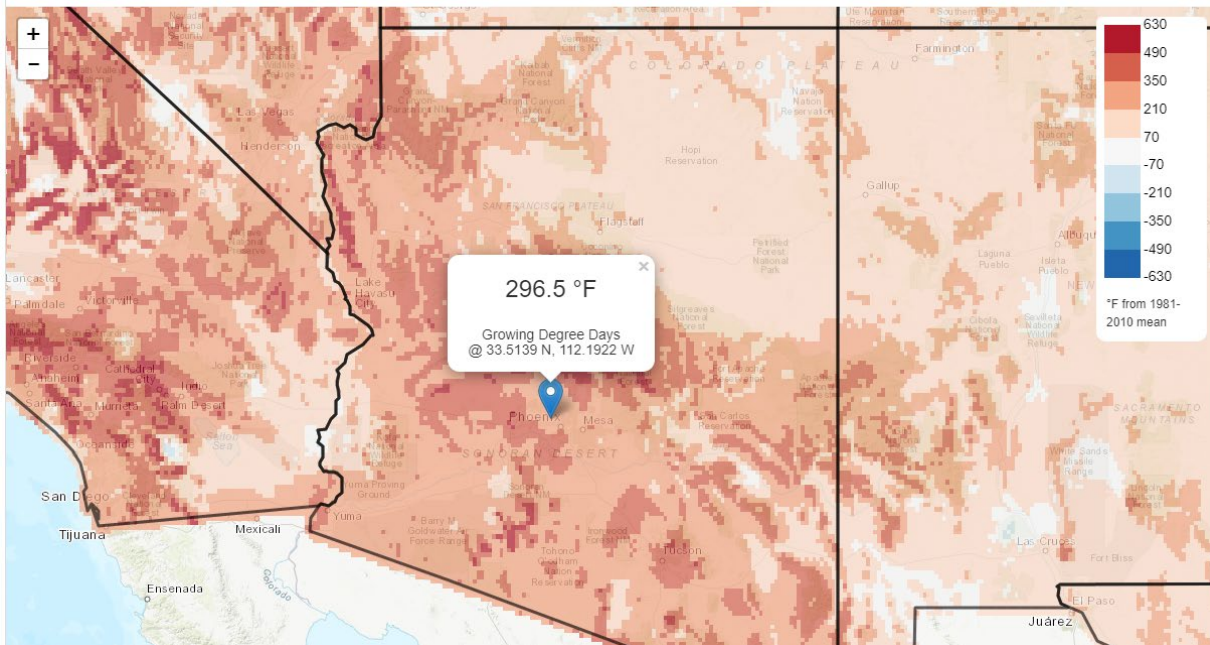


# Temperature – last 3 months



# Growing Degree Days (40°F) Anomaly (°F), Since Oct 1st

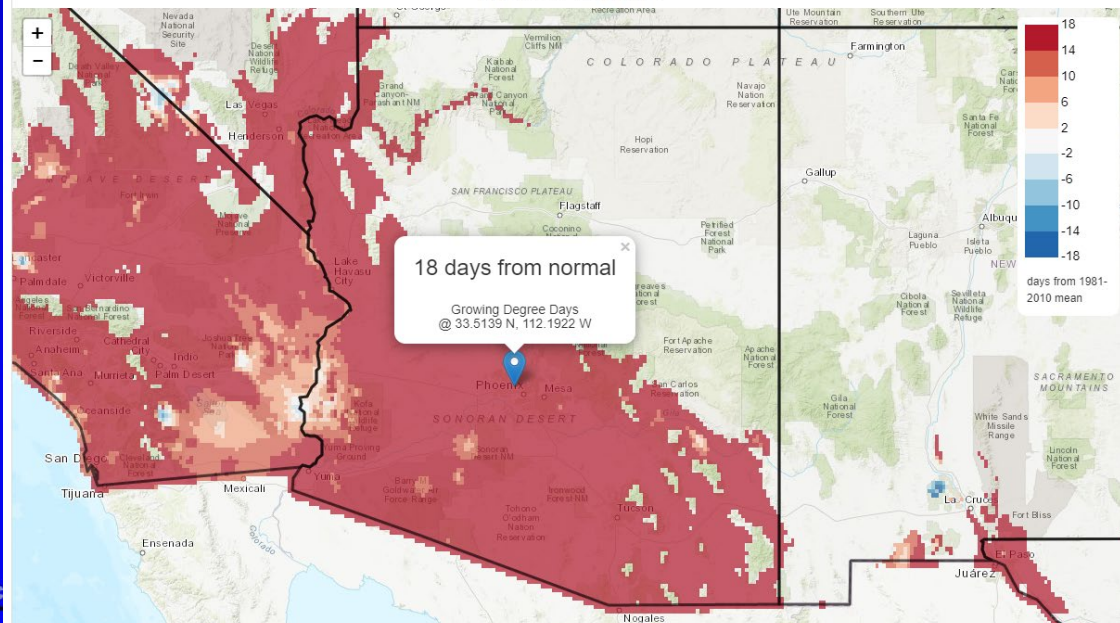
2020/10/01 - 2021/01/23



# Growing Degree Day Anomalies (10/1-1/23)

# Growing Degree Days (40°F) Anomaly (days), Since Oct 1st

2020/10/01 - 2021/01/23

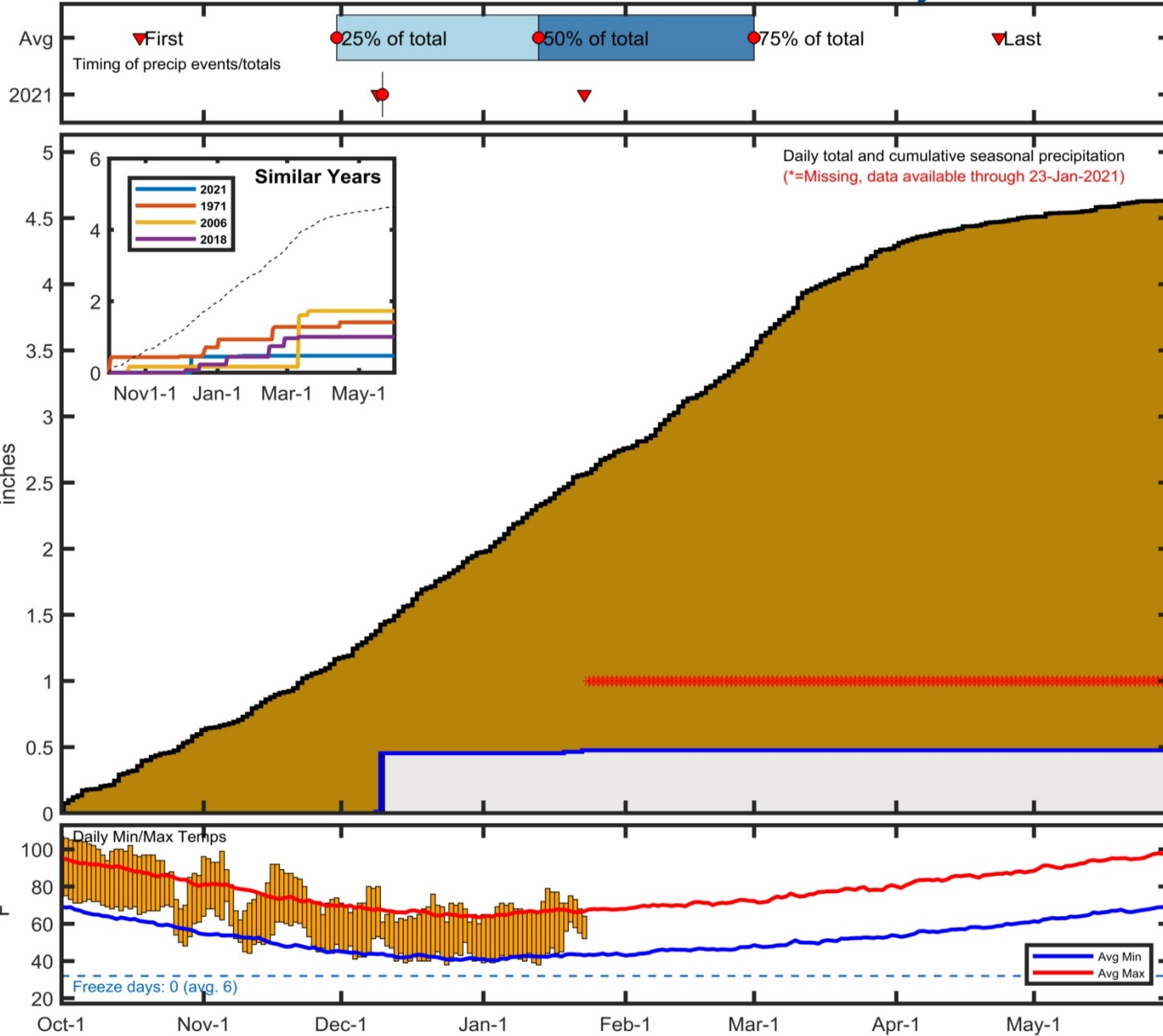


Gridded climate estimates from <https://climatetoolbox.org/tool/Climate-Mapper>





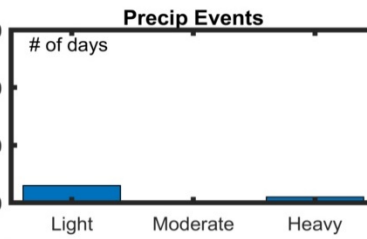
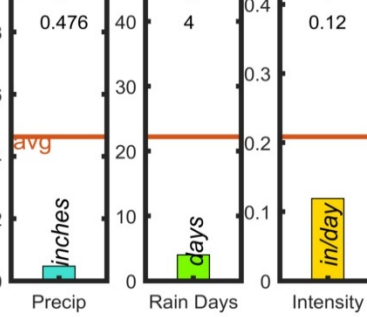
# 2020-2021 Cool Season Climate Summary



## PHOENIX SKY HARBOR INTL AP

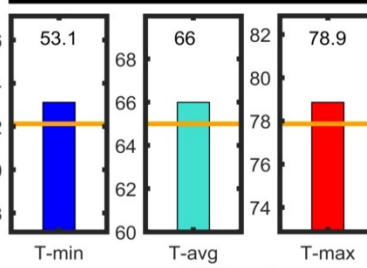
Elevation: 337m  
 Period of record: 1948-2021  
 Years in record: 74  
 Precip rank: **74** (1, wettest)  
 Temp rank: **32** (1, warmest)  
 Missing in 2021: 128 days

Total snow: 0 in, (0 % avg)

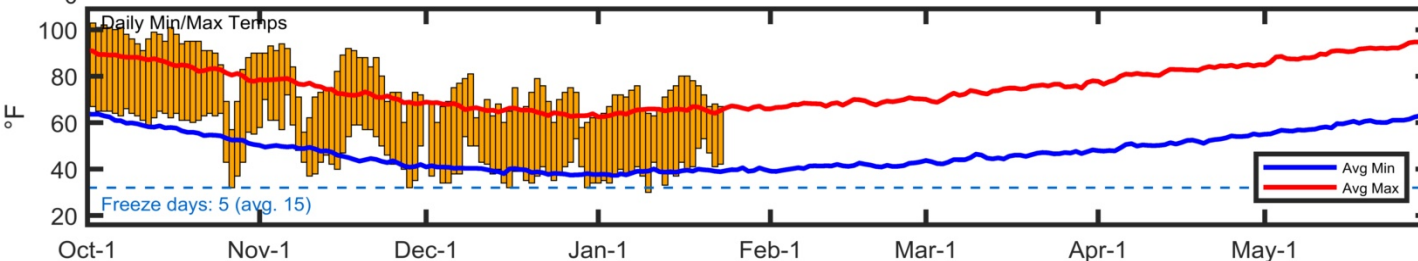
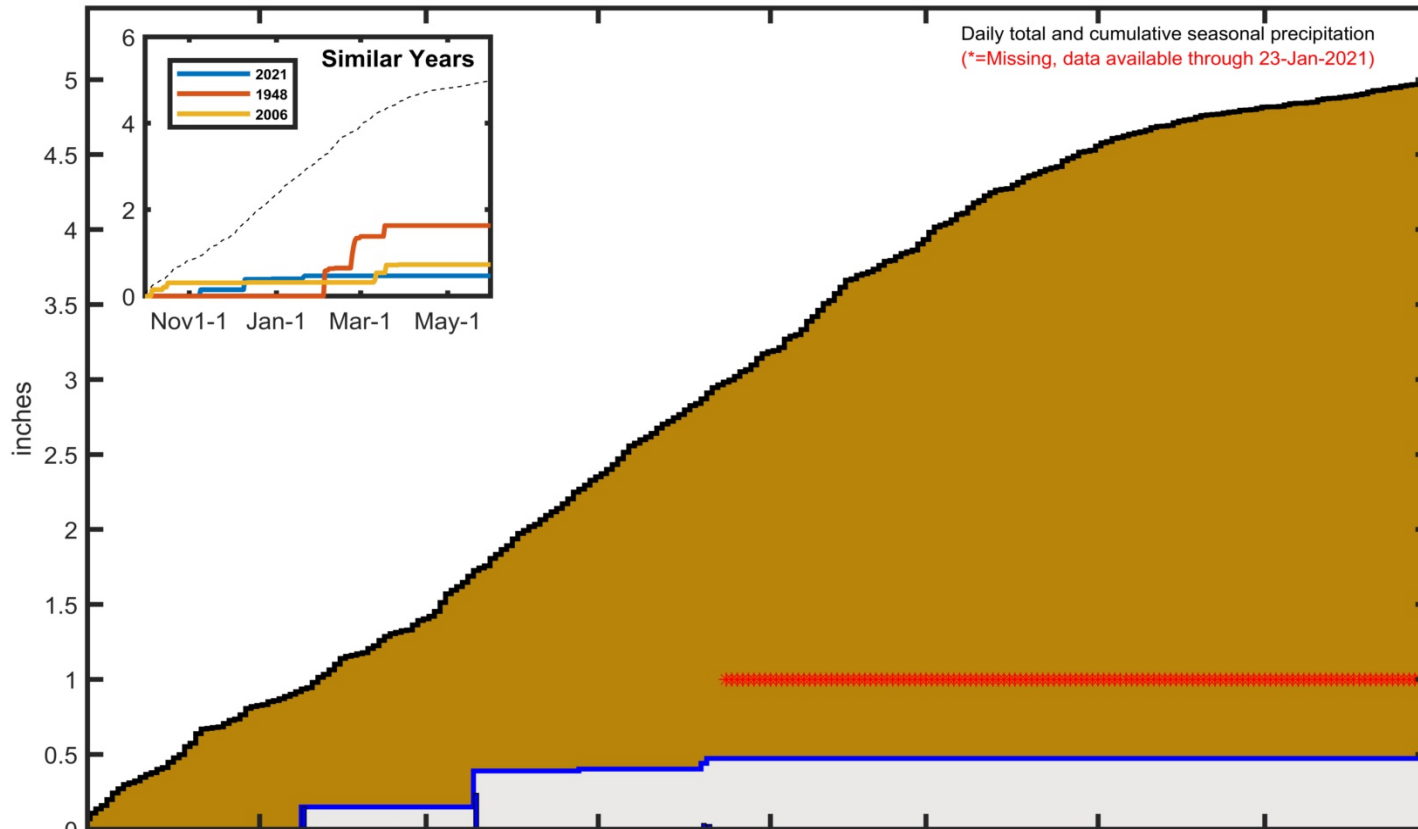
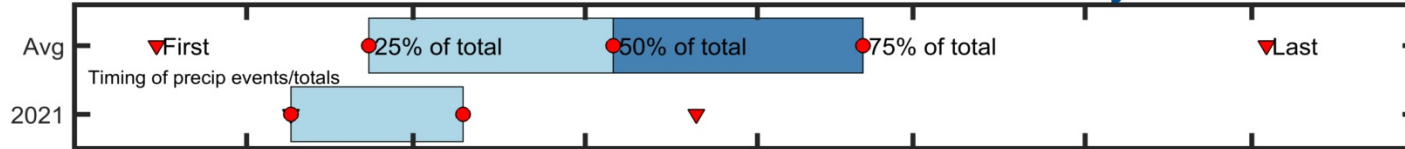


**Dry Spells**

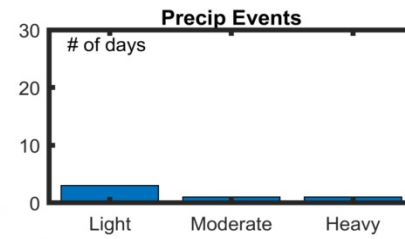
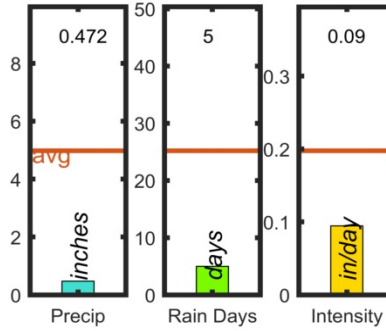
Avg length: 37 days (avg: 16)  
 Max length: 39 days (avg: 46)



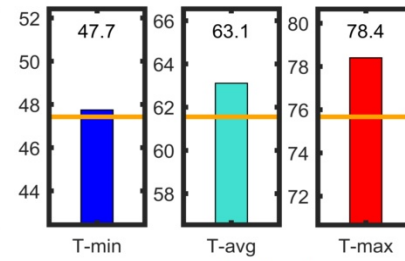
# 2020-2021 Cool Season Climate Summary



**TUCSON INTL AP**  
Elevation: 777m  
Period of record: 1948-2021  
Years in record: 74  
Precip rank: **74** (1, wettest)  
Temp rank: **14** (1, warmest)  
Missing in 2021: 128 days  
Total snow: **0** in. (0 % avg)

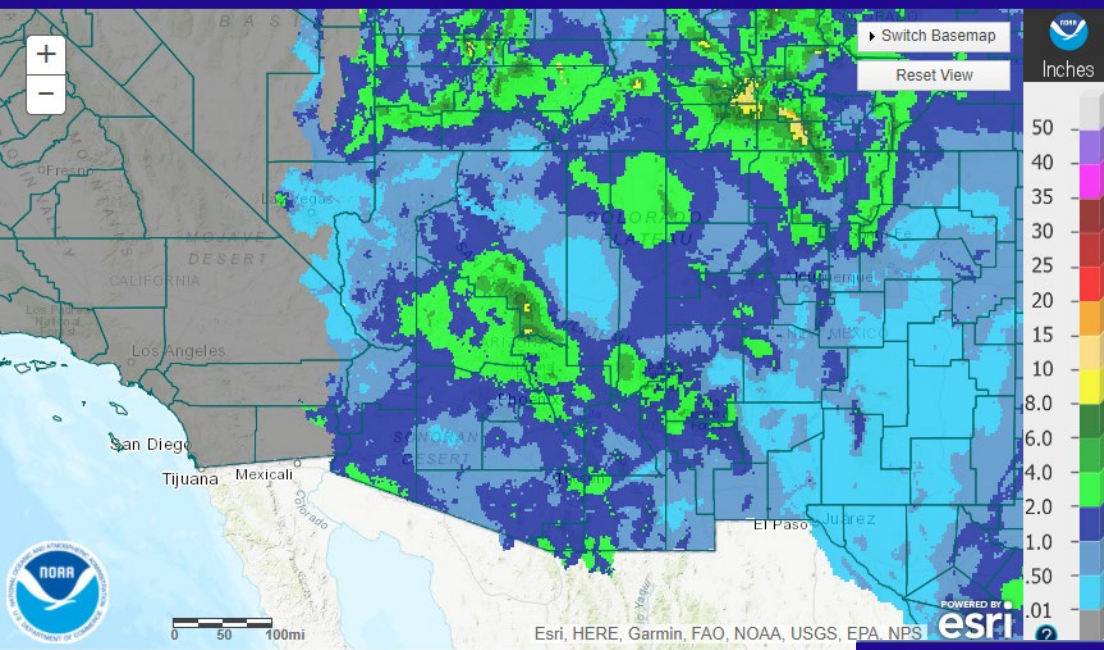


**Dry Spells**  
Avg length: 27 days (avg: 14)  
Max length: 30 days (avg: 42)



[What is UTC time?](#) [Map Help](#)

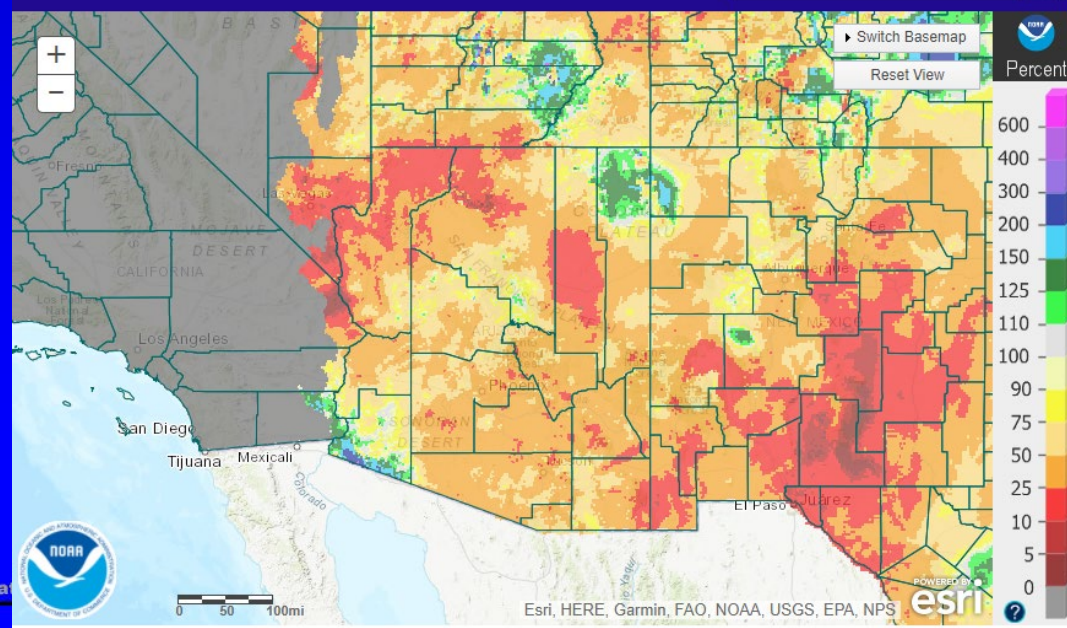
Find address or location



# 90-day Precipitation Totals (through Jan 26<sup>th</sup>)

[What is UTC time?](#) [Map Help](#)

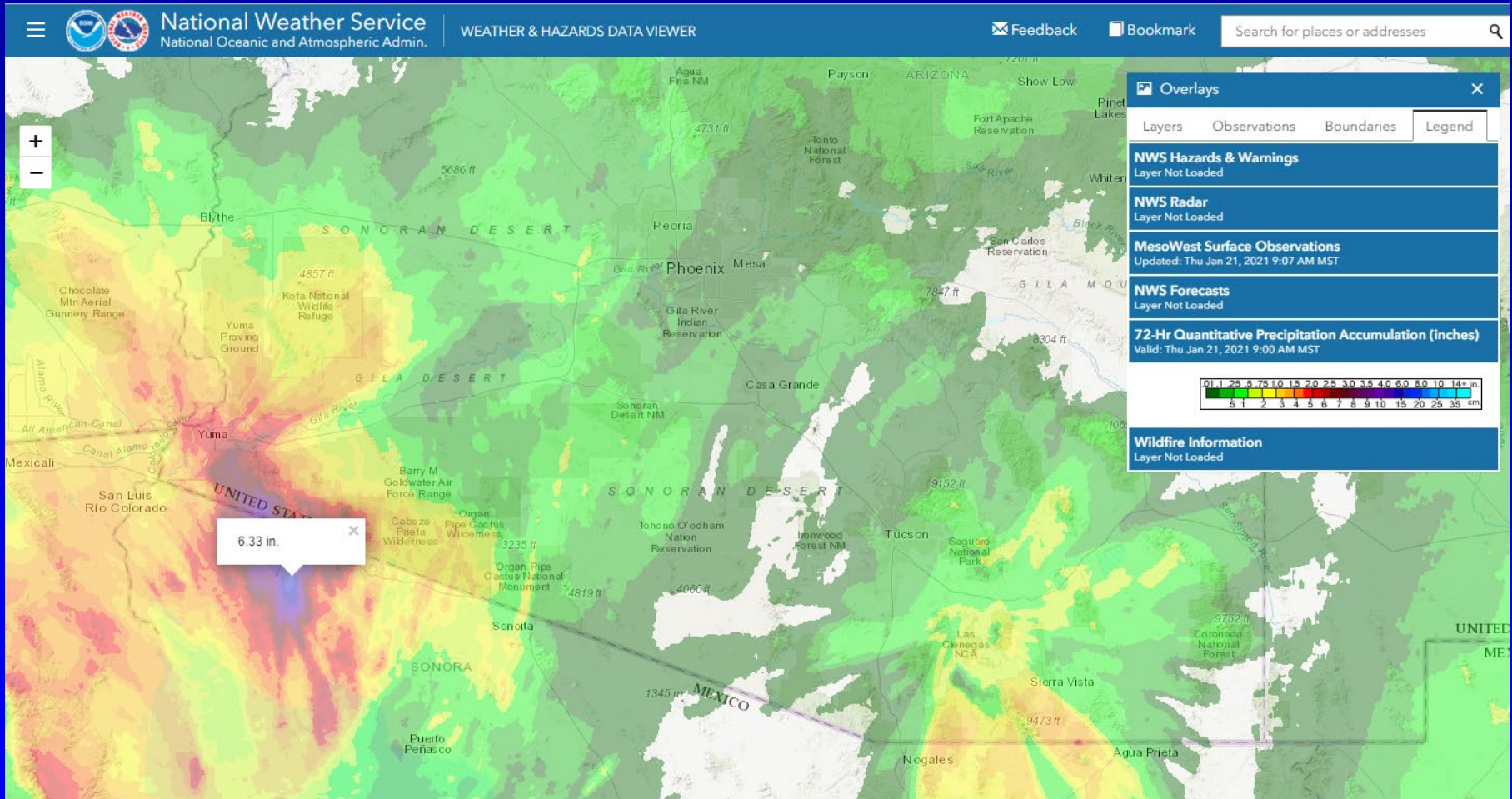
Find address or location



<https://water.weather.gov/precip/>



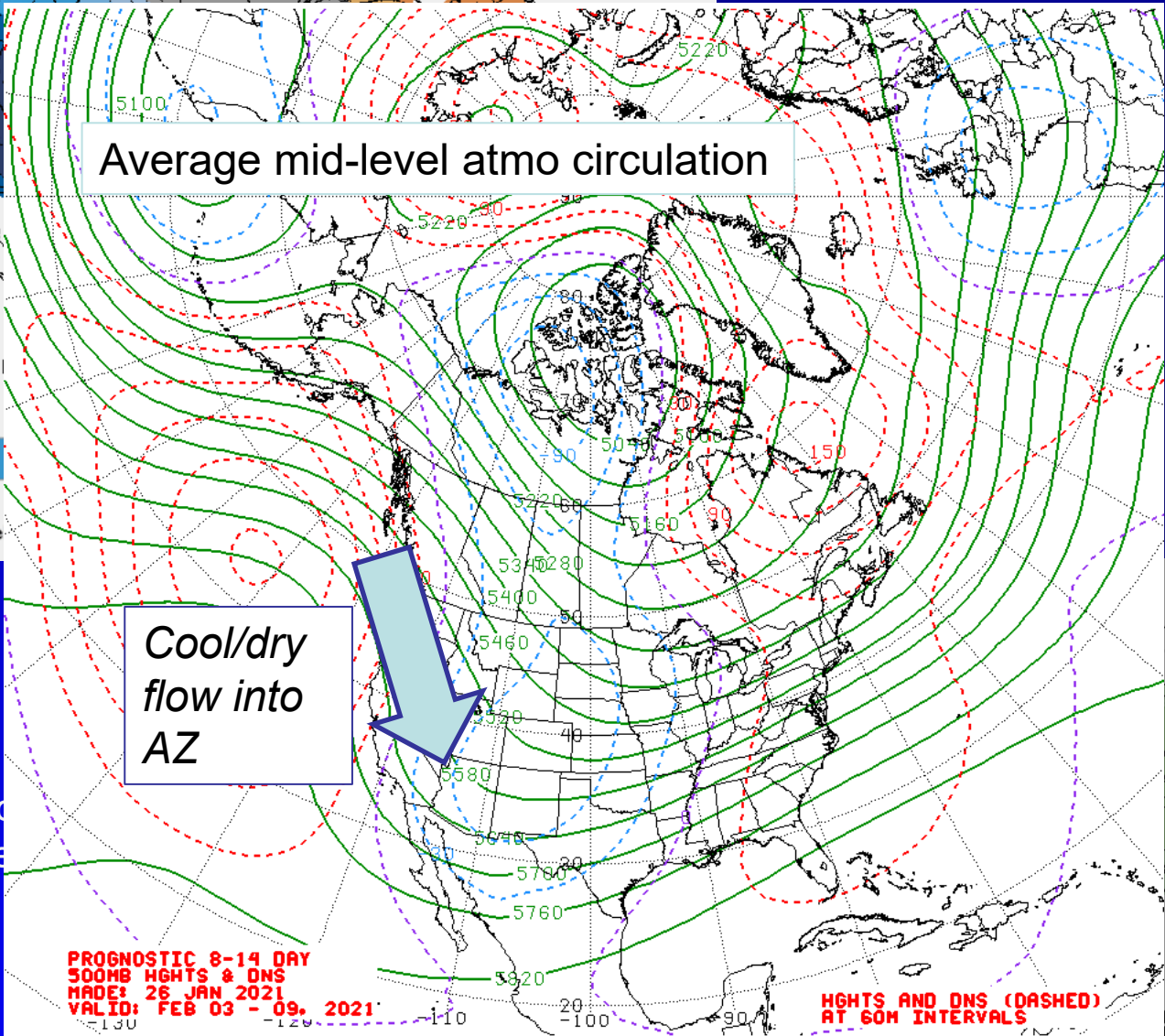
# Recent cool and wet conditions are helping improve short-term drought conditions



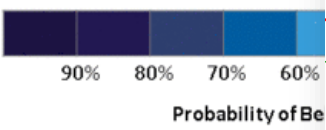
**Total precip Jan 19-21st**

# Weather and Seasonal Climate Outlooks

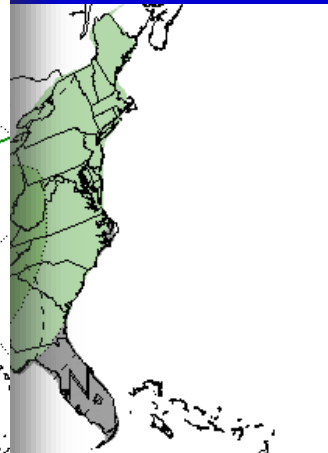




8-14 DAY OUTLOOK  
TEMPERATURE PROBABI  
MADE 26 JAN 2021  
VALID FEB 03 - 09.

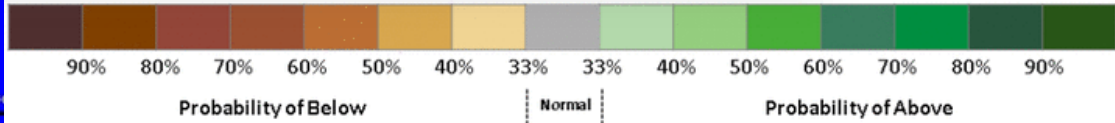


<https://www.c.../products/pre>

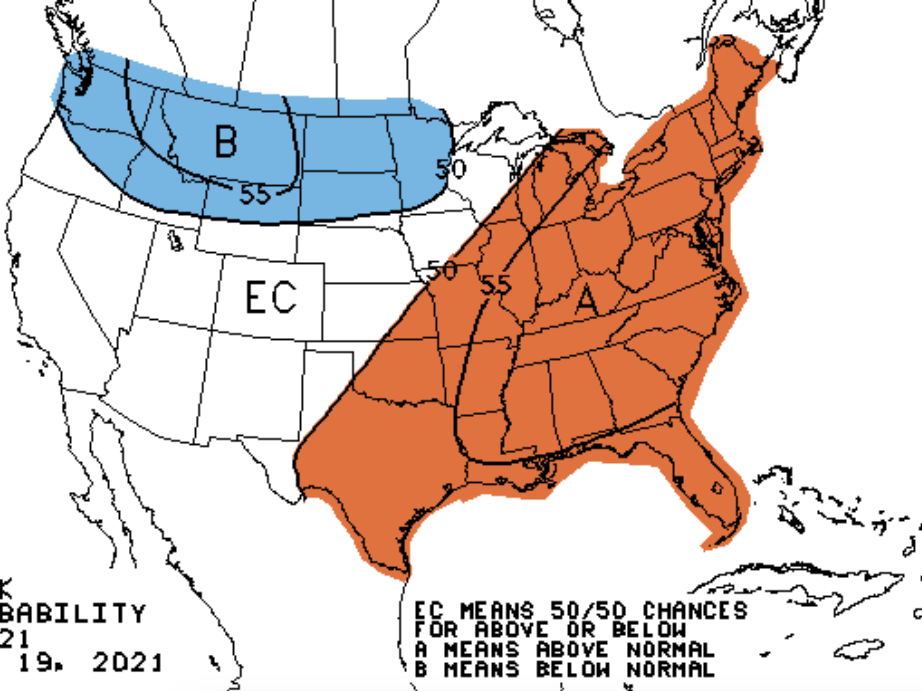


... LINES ARE CLIMATOLOGY  
... SHAD. AREAS ARE FCS  
... VALUES ABOVE (A) OR BELOW (B) NORMAL  
... GRAY AREAS ARE NEAR-NORMAL

VALID FEB 03 - 09, 2021



# Week 3-4 Forecasts (valid Feb 6-19)

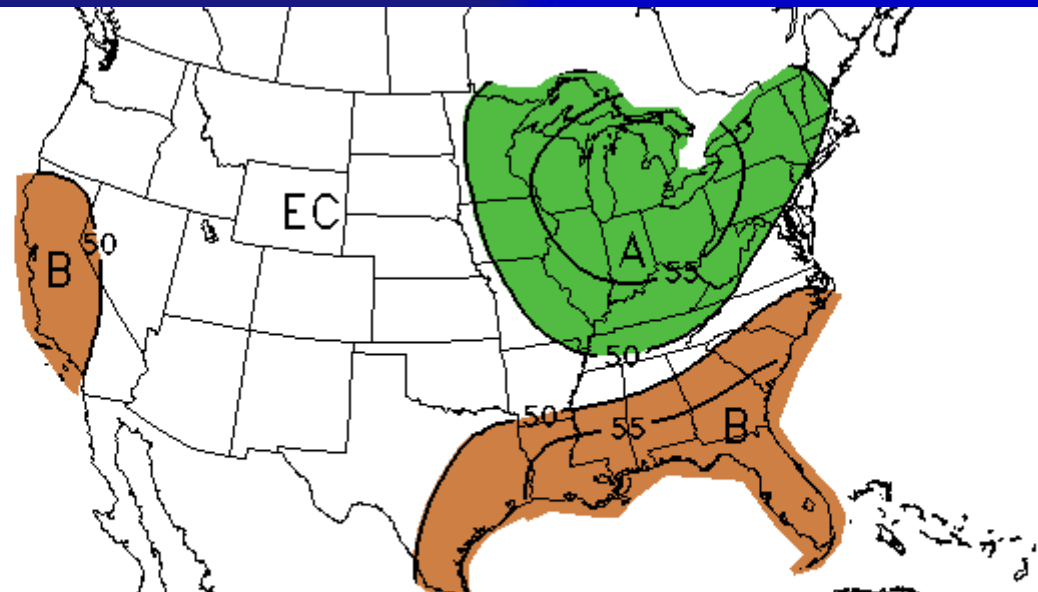


EC MEANS 50/50 CHANCES  
FOR ABOVE OR BELOW  
A MEANS ABOVE NORMAL  
B MEANS BELOW NORMAL



WEEK 3-4 OUTLOOK  
TEMPERATURE PROBABILITY  
MADE 22 JAN 2021  
VALID FEB 06 - 19, 2021

La Niña pattern, but  
less confidence in  
below-average precip  
across SW



EC MEANS 50/50 CHANCES  
FOR ABOVE OR BELOW  
A MEANS ABOVE NORMAL  
B MEANS BELOW NORMAL



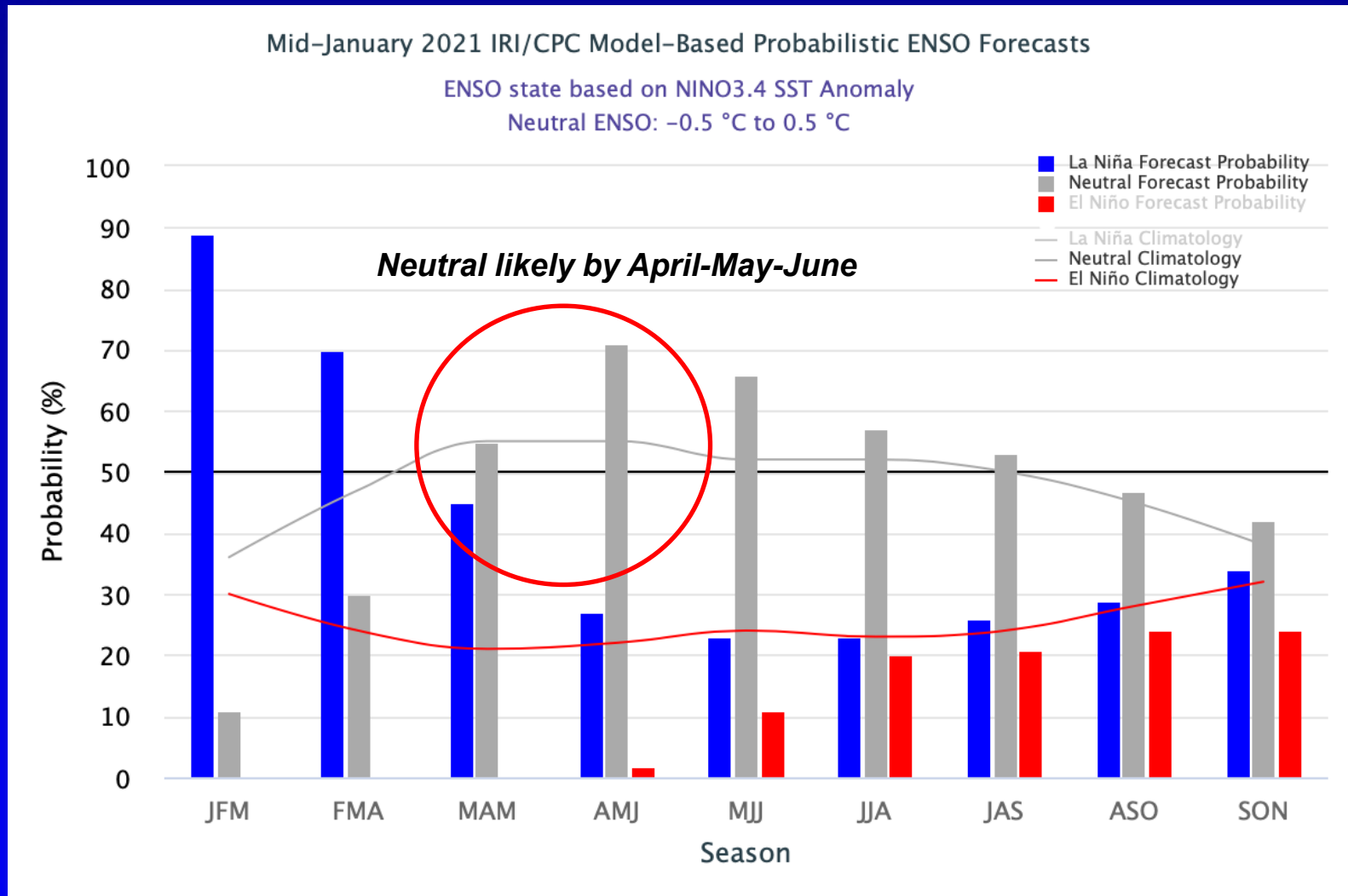
WEEK 3-4 EXPERIMENTAL OUTLOOK  
PRECIPITATION PROBABILITY  
MADE 22 JAN 2021  
VALID FEB 06 - 19, 2021

<https://www.cpc.ncep.noaa.gov/products/predictions/WK34/>



Climate Science Applications Project

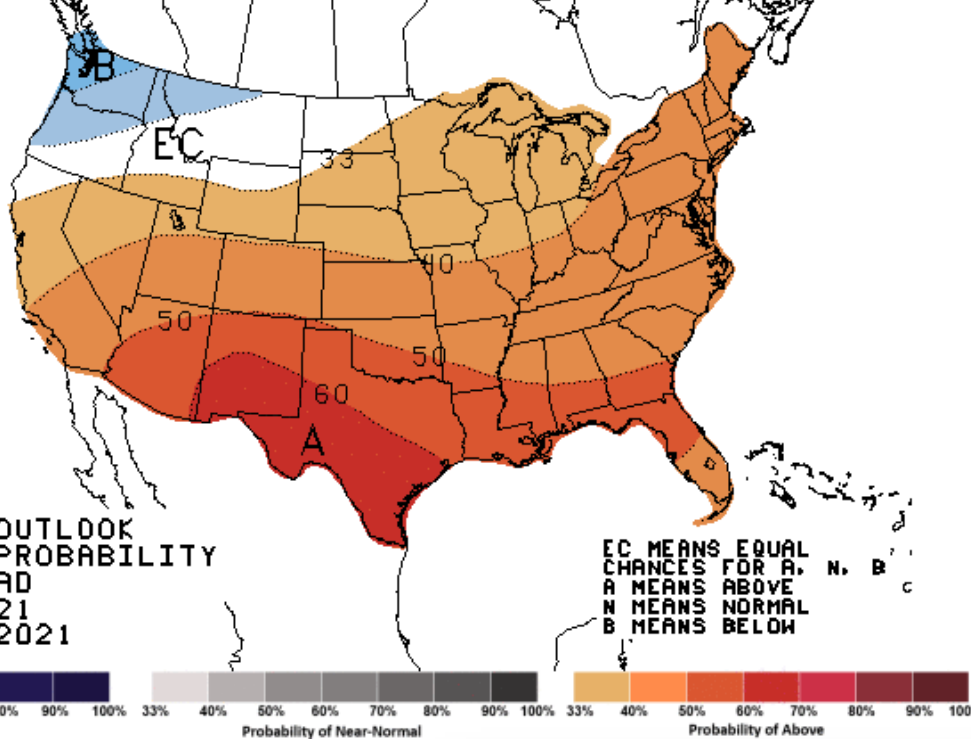
# La Niña pattern expected to wind down quickly this spring



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

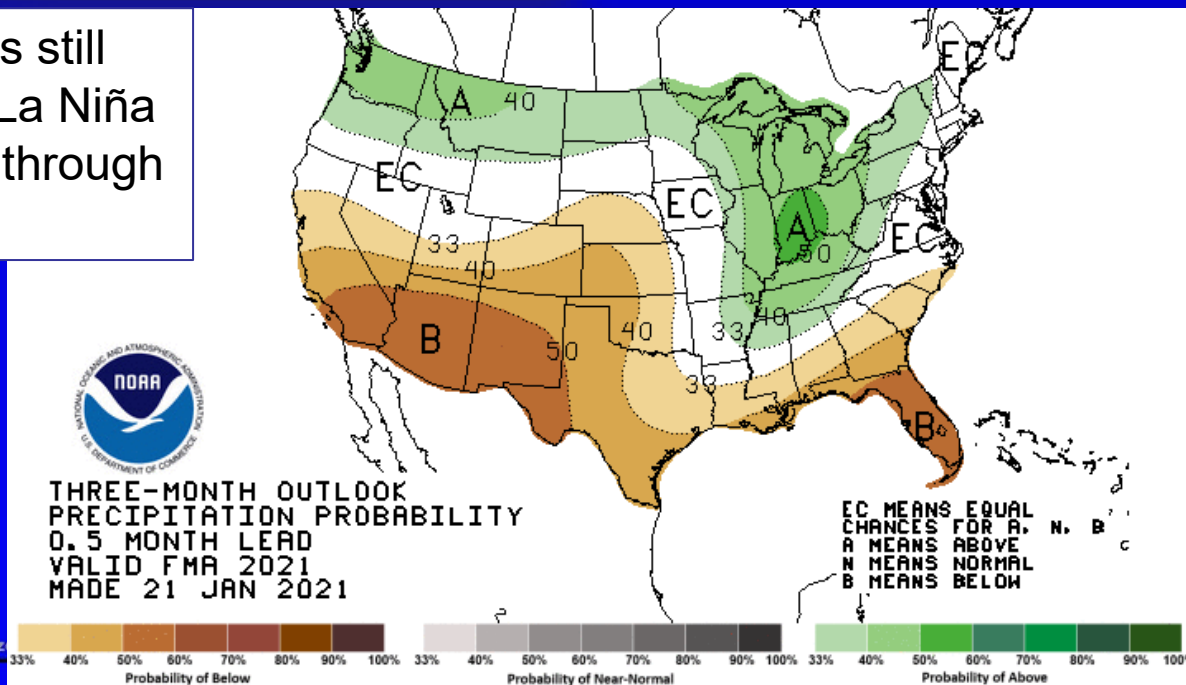


# Feb-Mar-April Climate Outlook



Seasonal outlook is still relying heavily on La Niña pattern continuing through spring

[https://www.cpc.ncep.noaa.gov/products/predictions/long\\_range/seasonal.php?lead=1](https://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=1)





# COLORADO BASIN RIVER FORECAST CENTER

NATIONAL WEATHER SERVICE / NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

- HOME
- RIVERS
- SNOW
- WATER SUPPLY
- RESERVOIRS
- WEATHER
- CLIMATE
- HELP
- ABOUT
- NEWS
- SEARCH

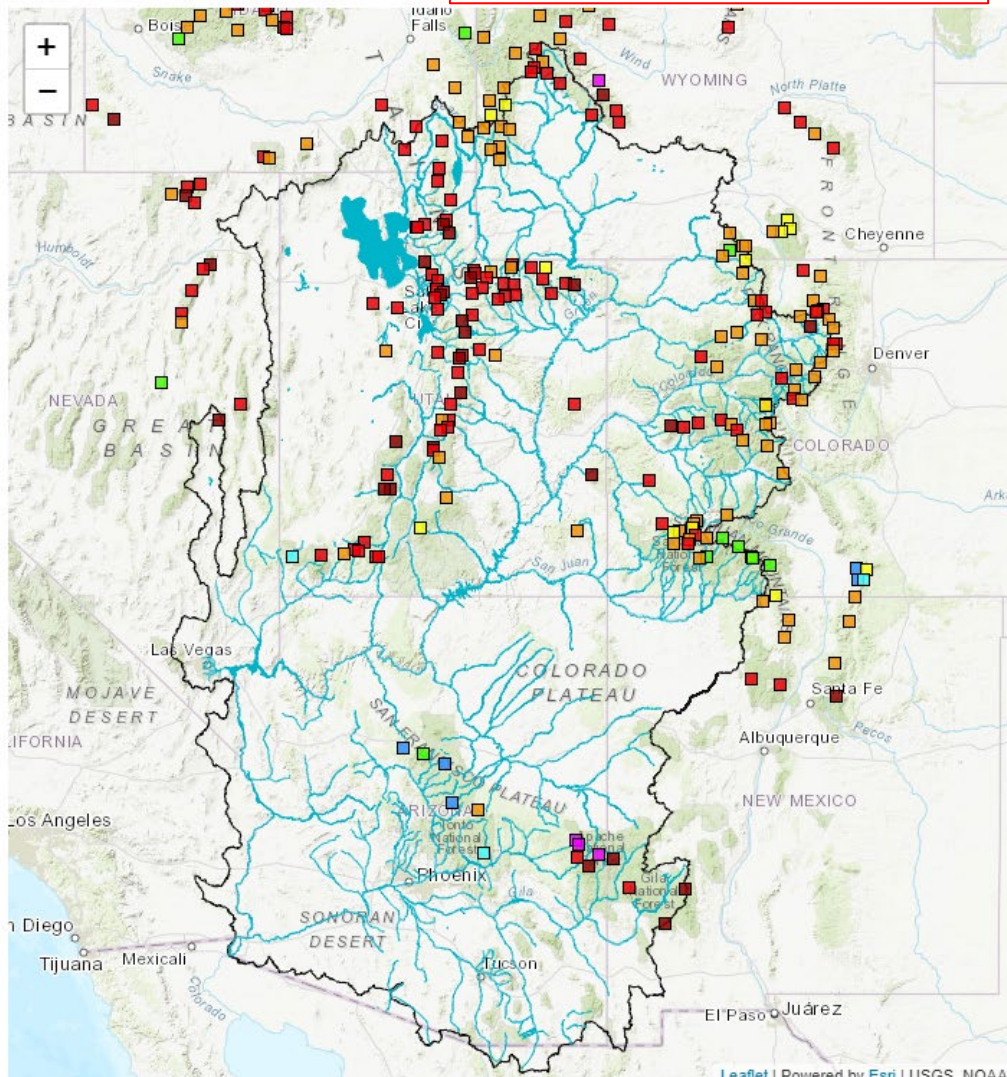
News

2021 Water Supply Forecast

## SNOTEL - % of Median (through Jan 27<sup>th</sup>)

### Conditions Map

Help



River Conditions

Snow Conditions

Points

Grids

Model

Data Updated: 2021-01-27

Show [Hide Other Types](#)

- No Data
- No Average
- < 7000 ft
- 7000-8000 ft
- 8000-9000 ft
- 9000-10000 ft
- > 10000 ft

- Percentiles
- Percent Average
- Percent Median

- No Data
- < 30%
- 30-50%
- 50-70%
- 70-90%
- 90-100%
- 100-110%
- 110-130%
- 130-150%
- 150-200%
- 200-300%
- 300-500
- >500%

Water Supply Forecasts

Peak Flow Forecasts

CSAP





# COLORADO BASIN RIVER FORECAST CENTER

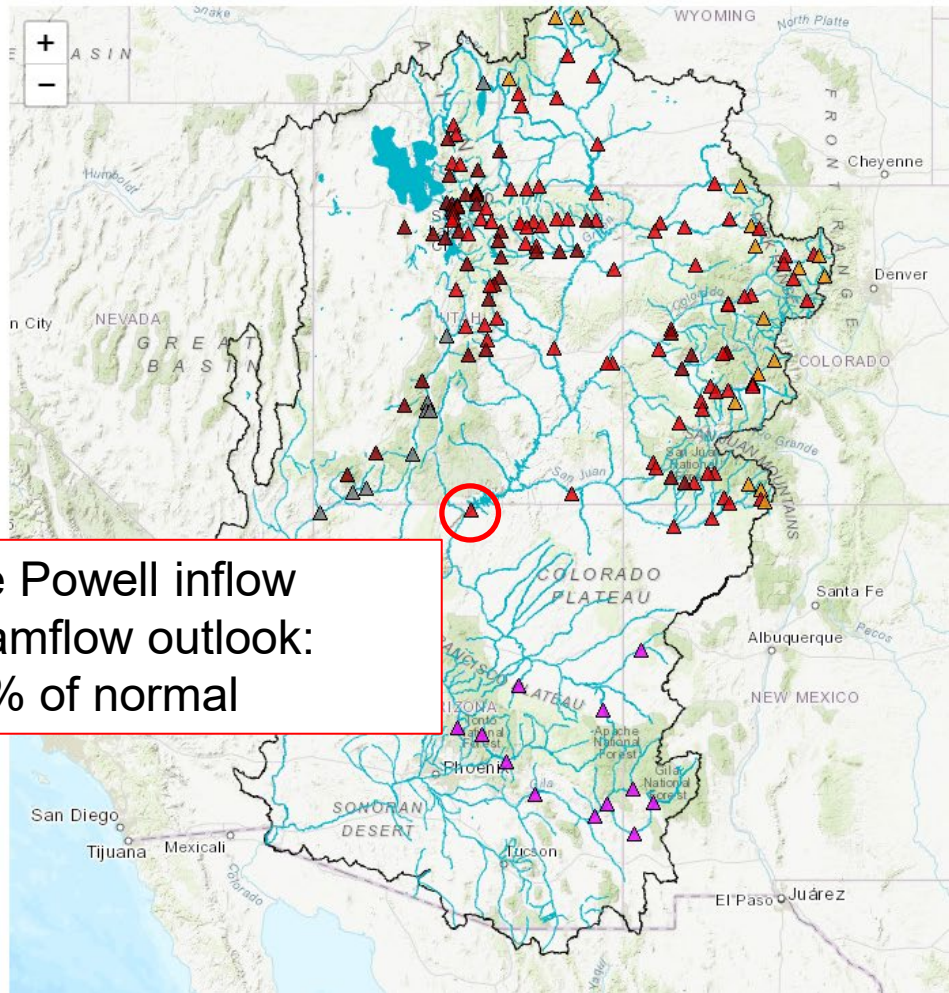
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News 2021 Water Supply Forecast Webinar Schedule and Registration -> [More Info...](#)

## Conditions Map

Help



Lake Powell inflow  
streamflow outlook:  
~53% of normal

▶ River Conditions

▶ Snow Conditions

▶ Water Supply Forecasts

First of Month Forecast Date: 2021-1-1 [Help](#)  
Latest Model Run Date: 2021-01-25

Show [Hide Other Types](#)

- First of Month Forecast Percent Average
- First of Month Forecast Percent Median
- Latest Model Guidance Percent Average
- Latest Model Guidance Percent Median

- ▲ < 30%
- ▲ 30-50%
- ▲ 50-70%
- ▲ 70-90%
- ▲ 90-100%
- ▲ 100-110%
- ▲ 110-130%
- ▲ 130-150%
- ▲ 150-200%
- ▲ 200-300%
- ▲ 300-500%
- ▲ >500%
- ▲ Regulated
- △ No Forecast

▶ Peak Flow Forecasts

▶ Reservoir Conditions

▶ Daily Precipitation

▶ Monthly Precipitation

▶ Soil Moisture

CSAP

# Western Water Assessment December 2020 Briefing

**“January 1st snow-water equivalent was below normal for much of the region, especially in Utah. As a result, early season forecasts of spring runoff volume are below normal to much-below normal for the entire region except northern Wyoming. The seasonal runoff forecast for the Lake Powell inflow is only 53% of normal.”** (<https://wwa.colorado.edu/climate/info-dashboard.html#flowcast>)



# Closing Points

- La Niña conditions have largely controlled the weather pattern across the SW since November
- Warm and relatively dry conditions have persisted over the past couple of months
- Low relative humidity has also led to strong diurnal temperature variations and cool overnight temps in low lying areas
- Recent precipitation will be helpful for short-term drought conditions, but won't erase long-term deficits
- Recent wet conditions probably won't continue with above-average temps and below-average precip expected for much of the rest of the spring (especially into March and April)



# Thanks!

crimmins@arizona.edu

<http://cals.arizona.edu/climate>

