

# 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**

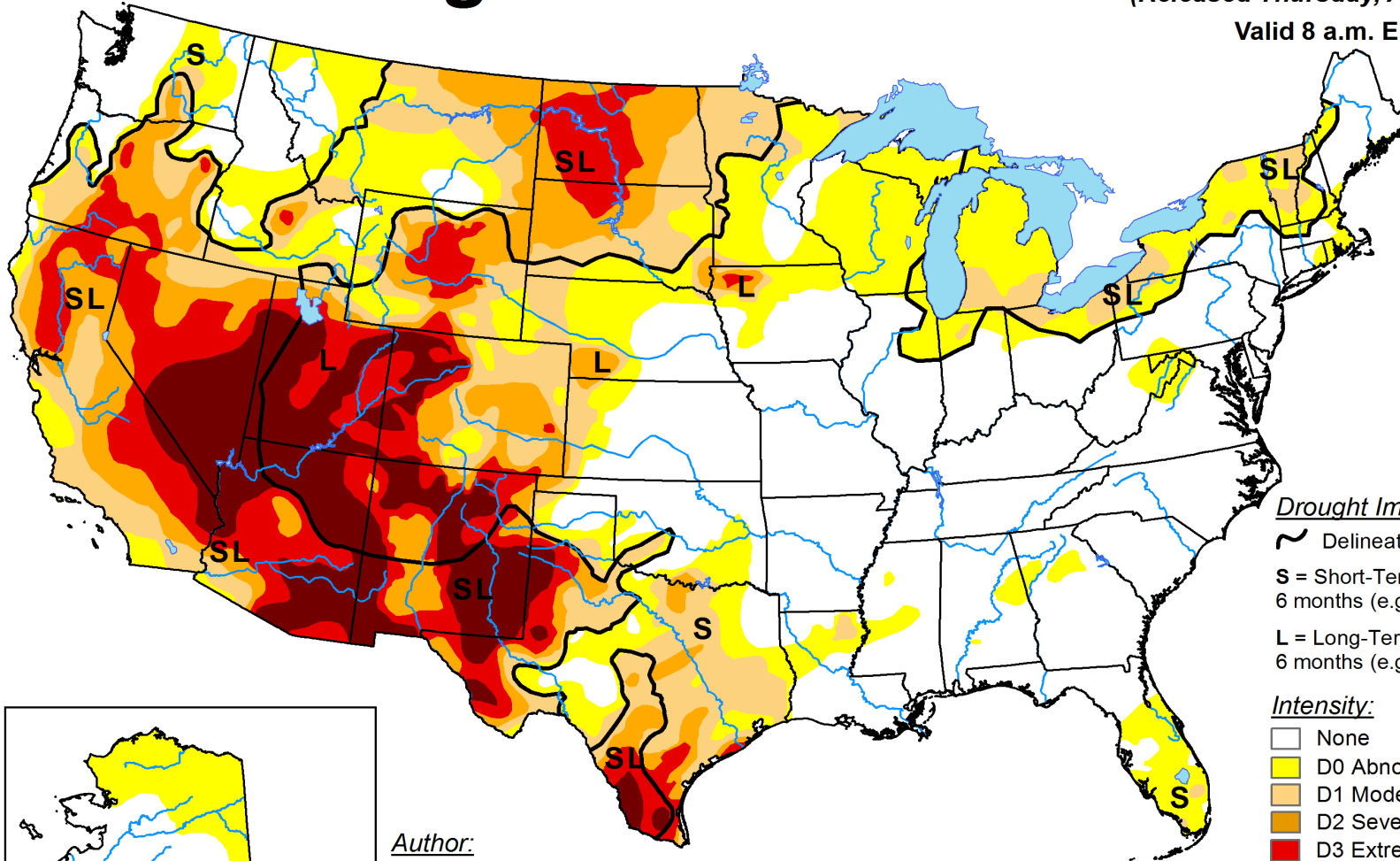


# U.S. Drought Monitor


March 30, 2021

(Released Thursday, Apr. 1, 2021)







Valid 8 a.m. EDT



### Drought Impact Types:

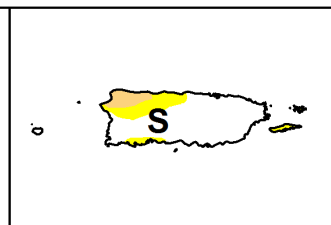
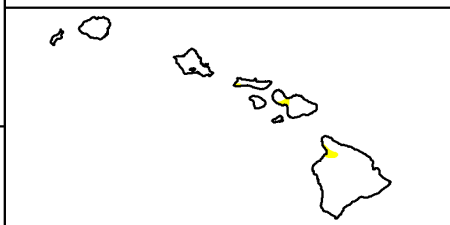
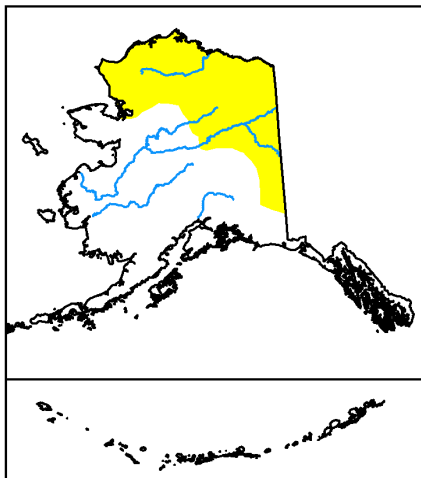
-  Delineates dominant impacts
- S** = Short-Term, typically less than 6 months (e.g. agriculture, grasslands)
- L** = Long-Term, typically greater than 6 months (e.g. hydrology, ecology)

### Intensity:

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

Author:  
Brad Pugh  
CPC/NOAA

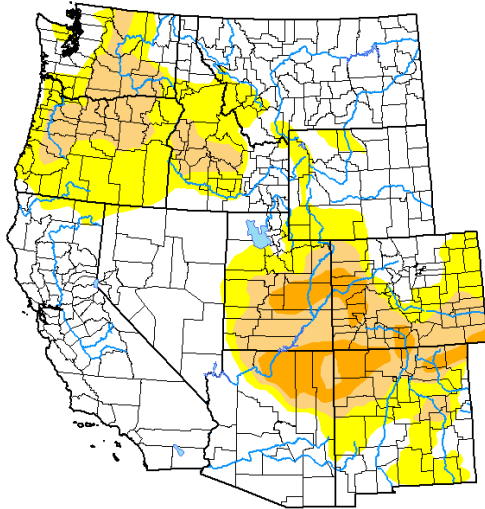
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>



[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

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>

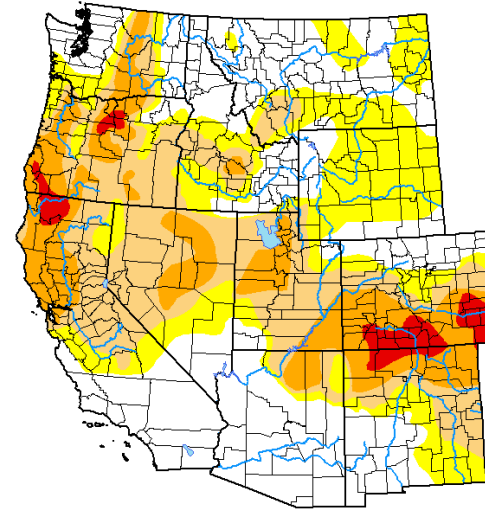
**Author:**  
Richard Heim  
NCEI/NOAA



[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

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>

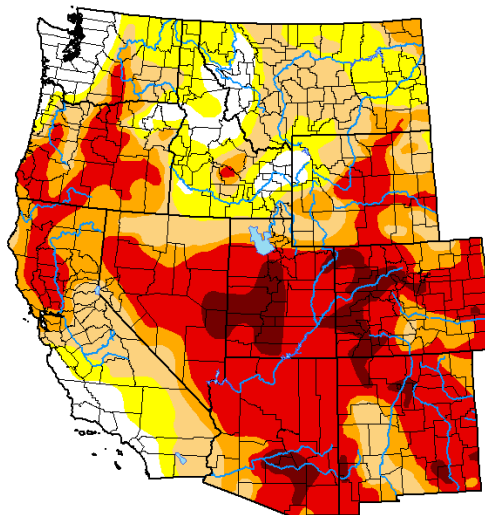
**Author:**  
Curtis Riganti  
National Drought Mitigation Center



[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>

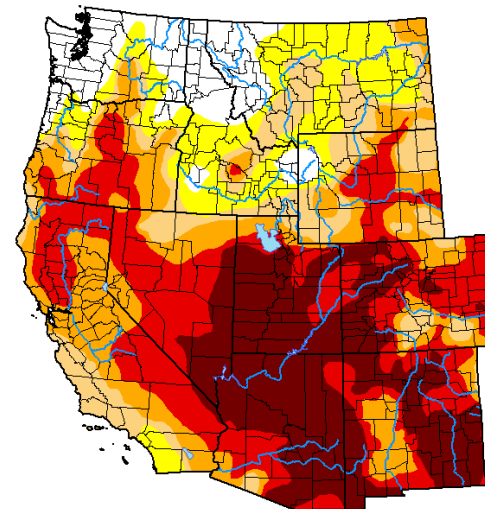
**Author:**  
David Miskus  
NOAA/NWS/NCEP/CPC



[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

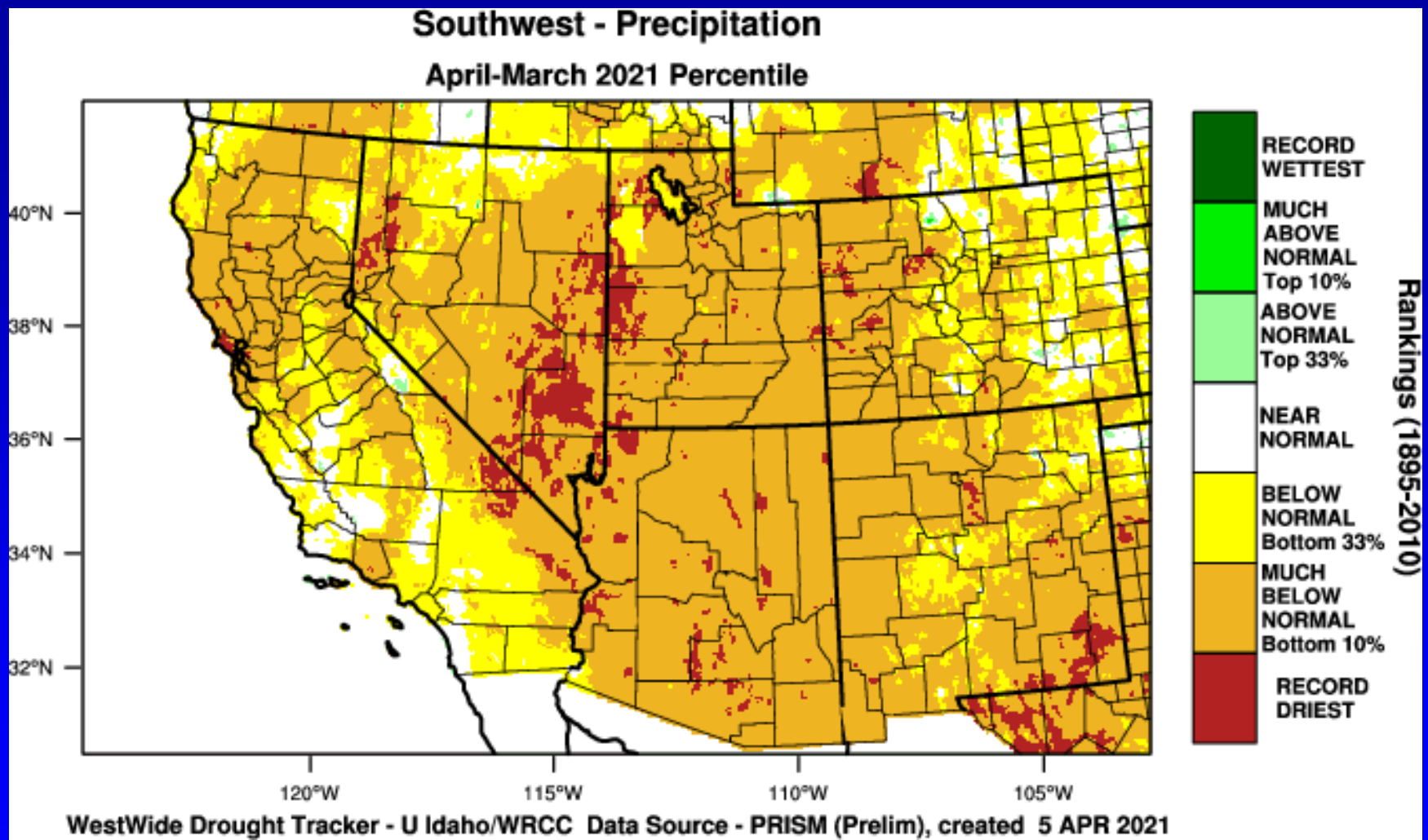
The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. For more information on the Drought Monitor, go to <https://droughtmonitor.unl.edu/About.aspx>

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

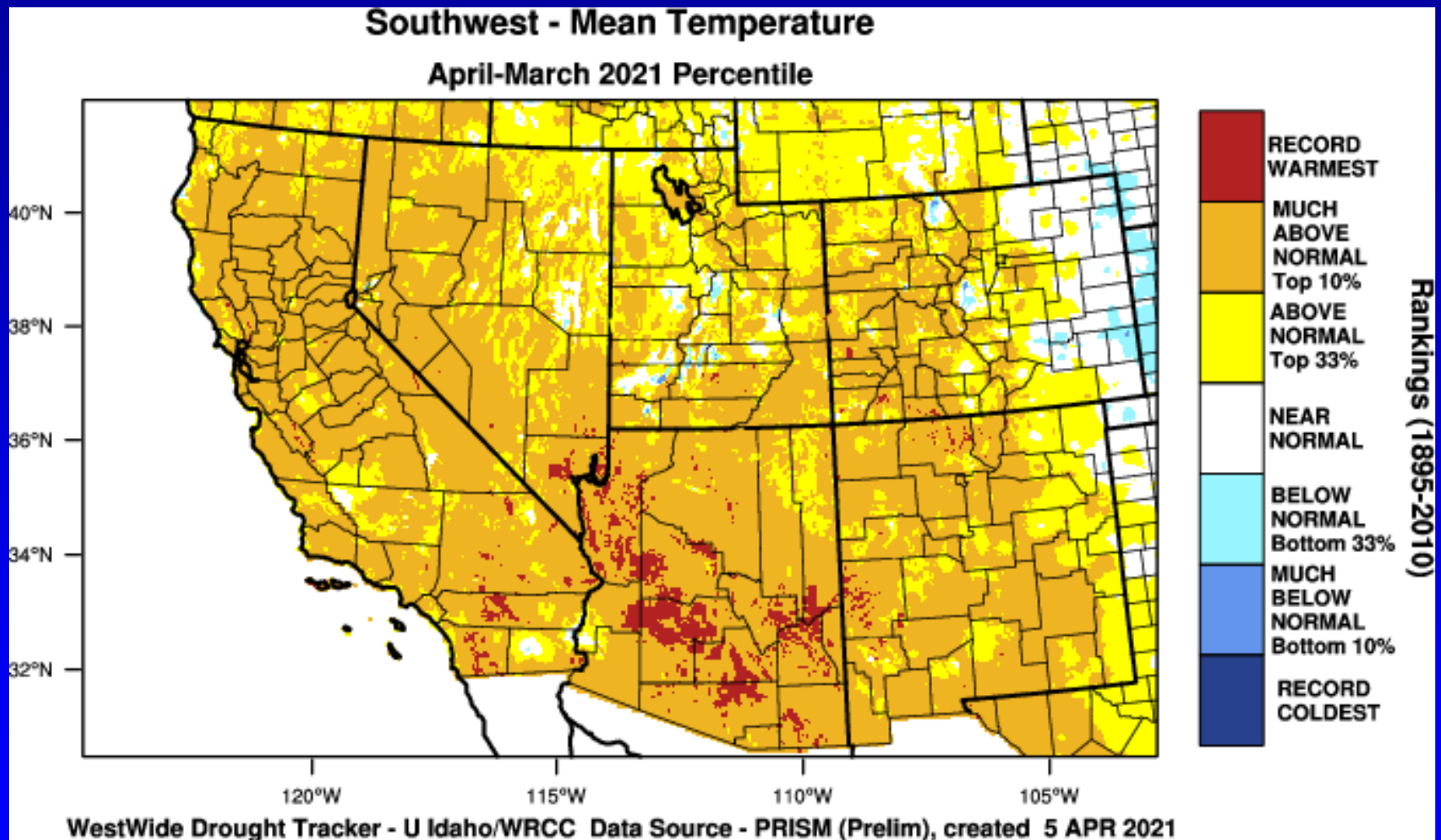


[droughtmonitor.unl.edu](https://droughtmonitor.unl.edu)

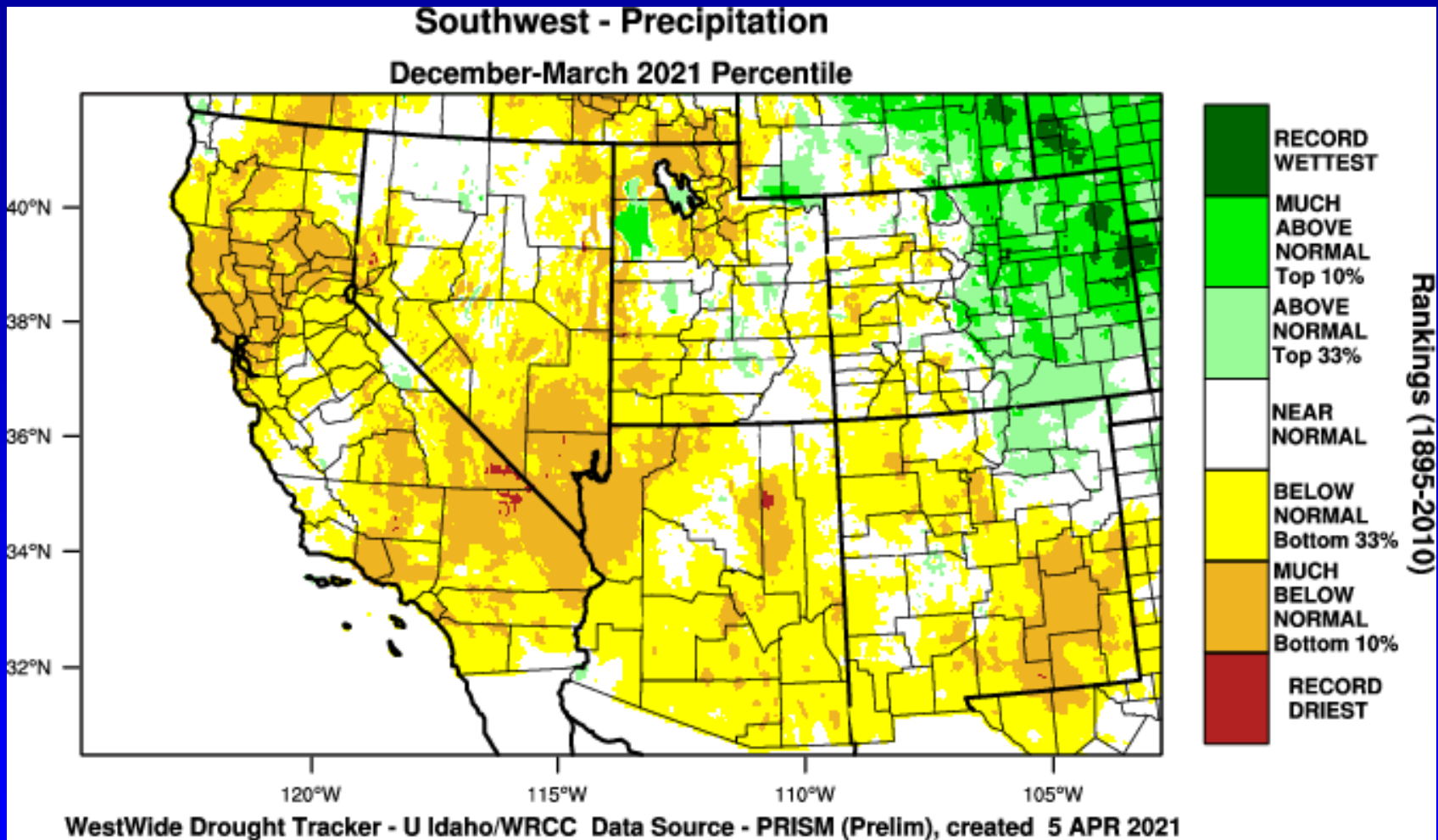
# Precipitation – last 12 months



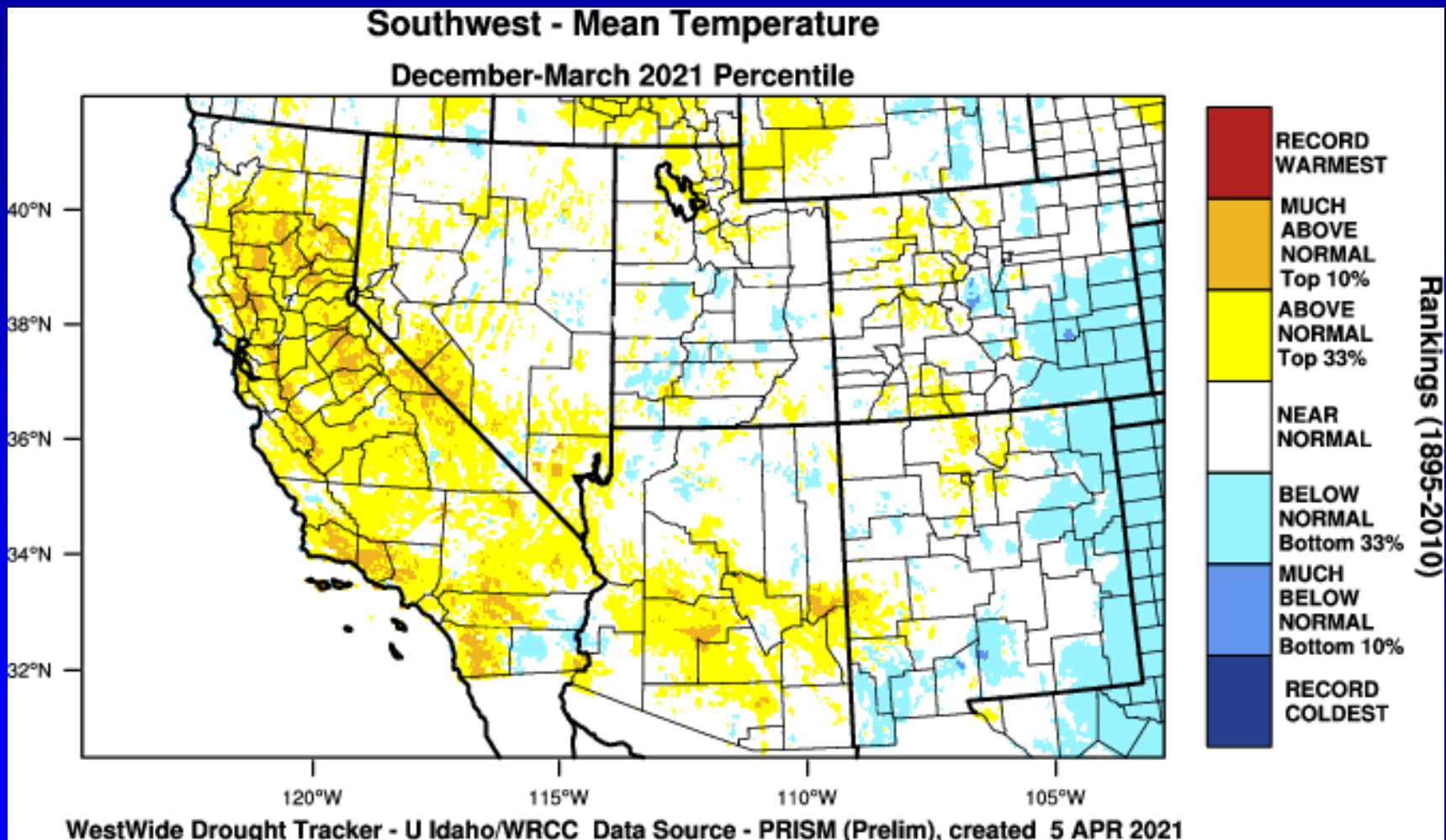
# Temperature – last 12 months



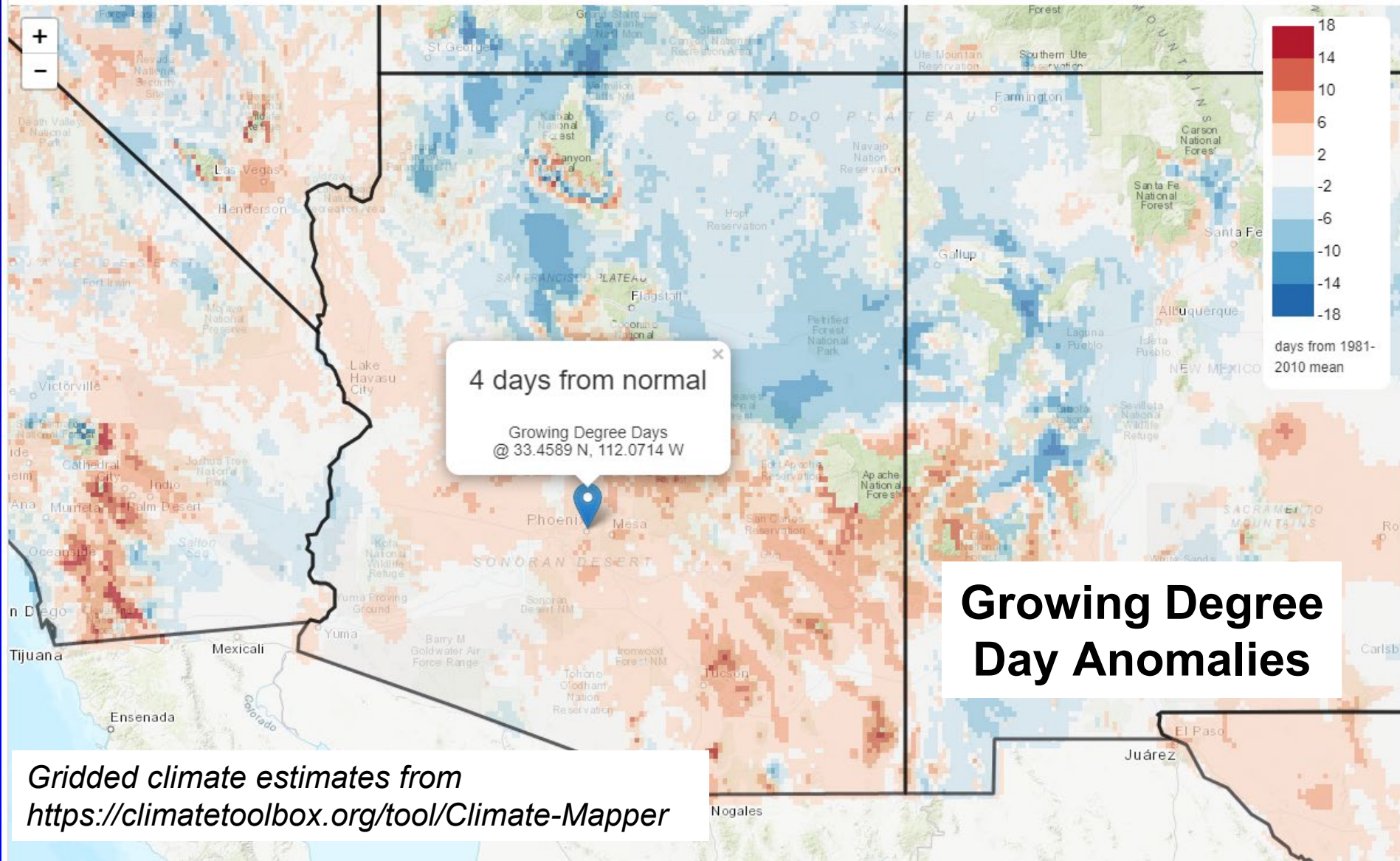
# Precipitation – last 4 months



# Temperature – last 4 months

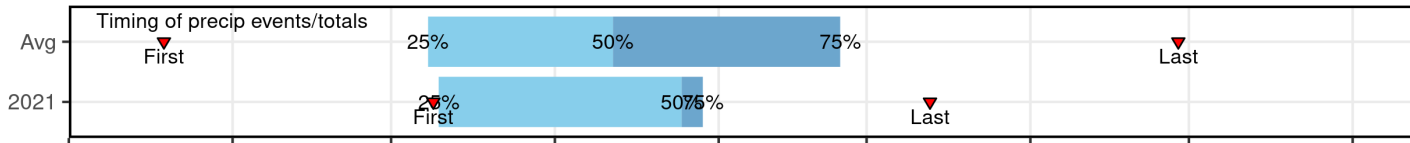


# Growing Degree Days (40°F) Anomaly (days), Since Jan 1st 2021/01/01 - 2021/04/05

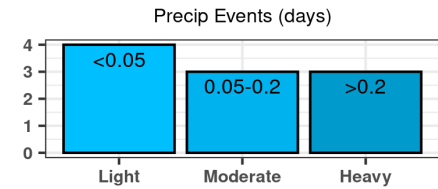
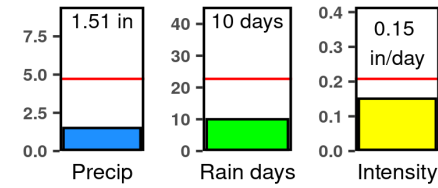
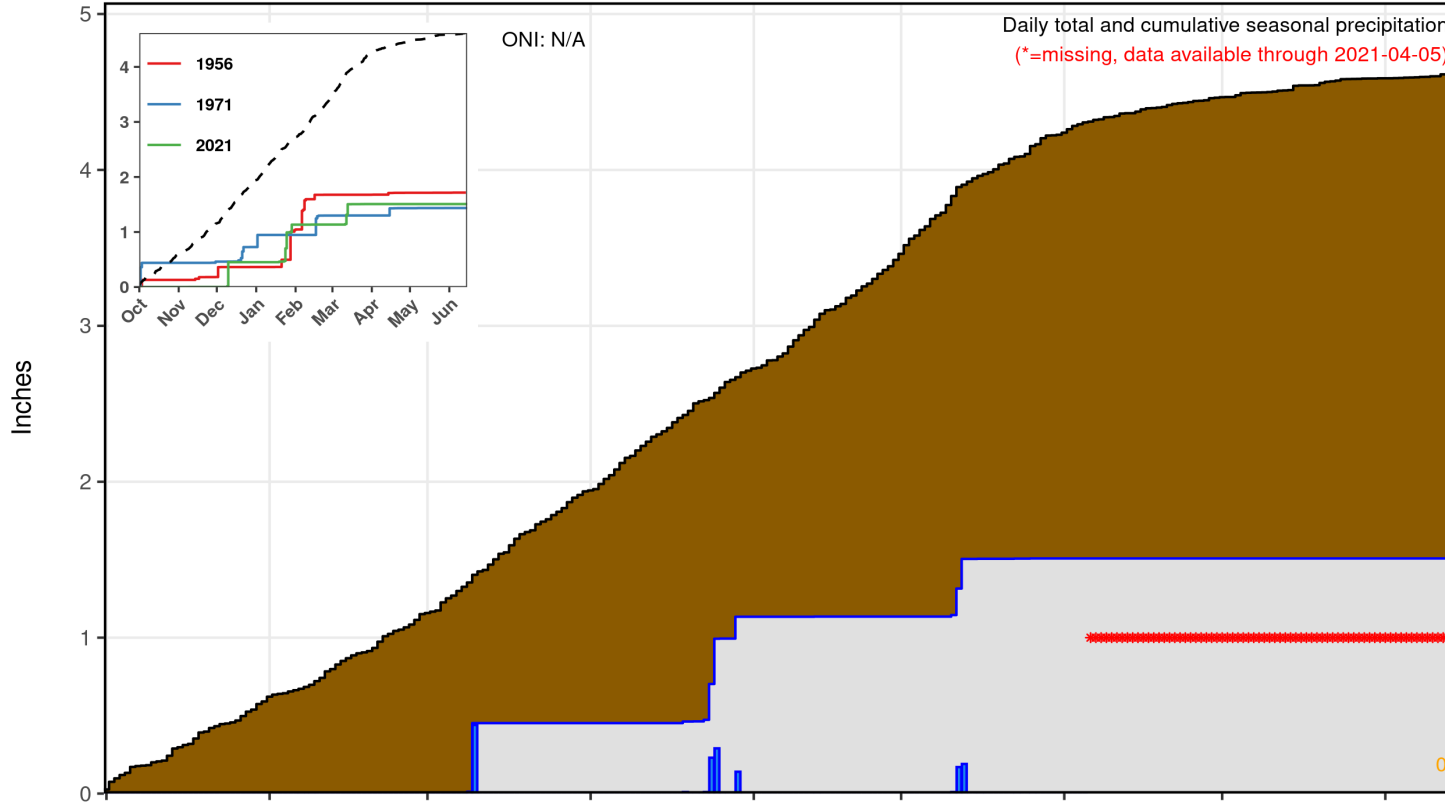
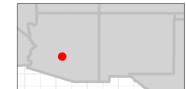




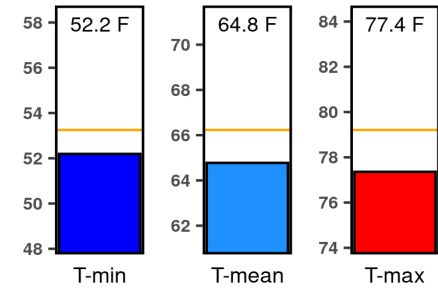
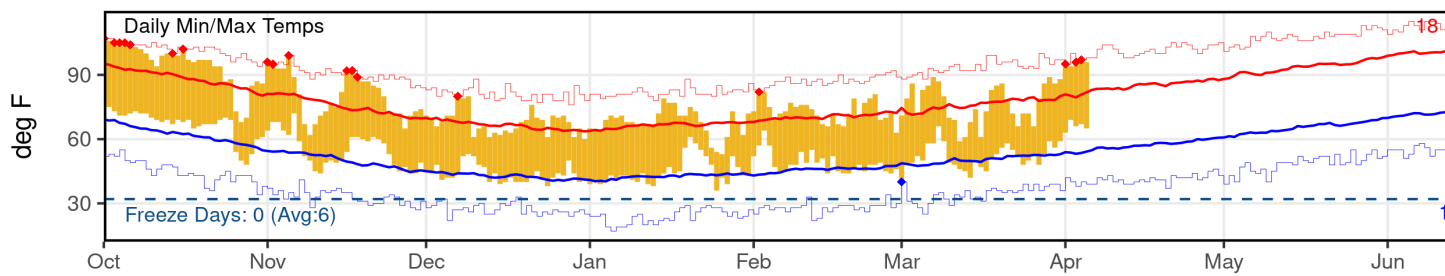
# Station Climate Summary: 10-01-2020 to 06-15-2021 (Cool Season)



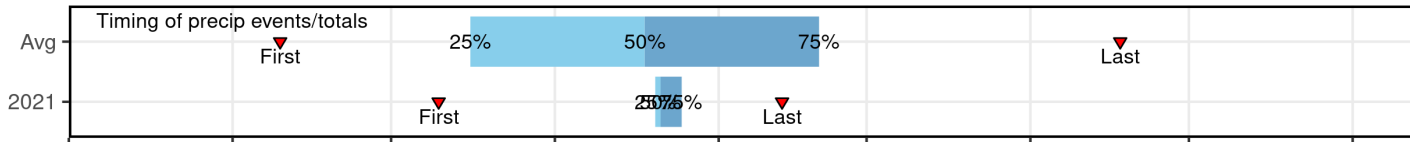
**PHOENIX AIRPORT**  
 Elevation (ft): 1107  
 Period of record: 1948-2023  
 Years in record: 76  
 Precip rank: 69 (1-wettest)  
 Temp rank: 50 (1-warmest)  
 Missing in 2021: 71  
 Total snow (in): 0 (0 % avg)



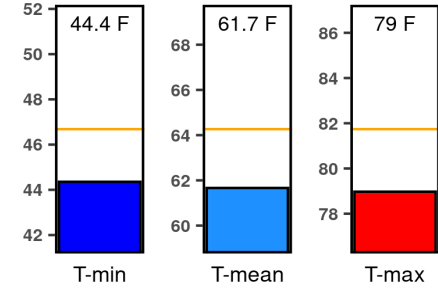
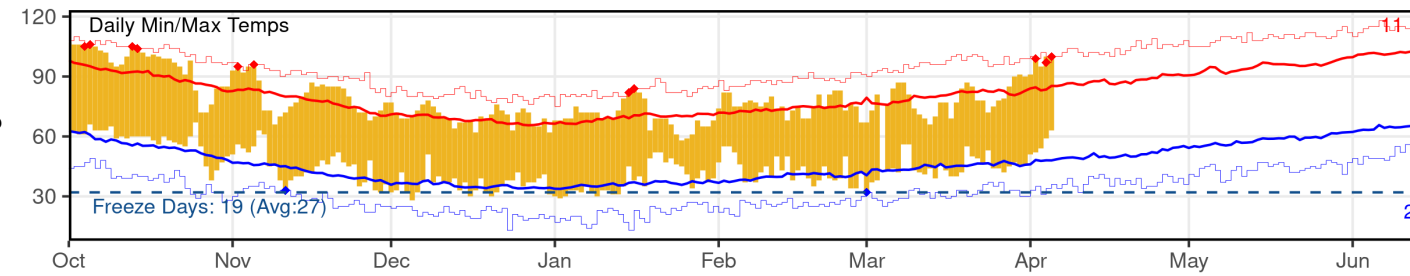
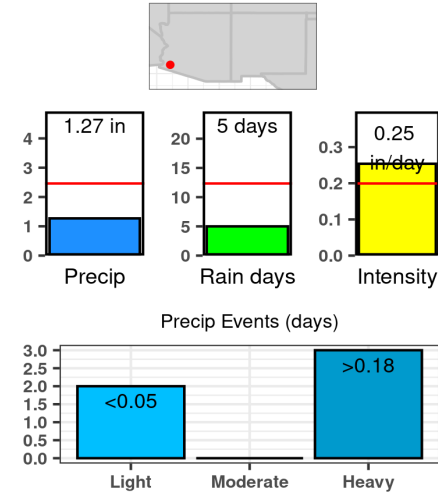
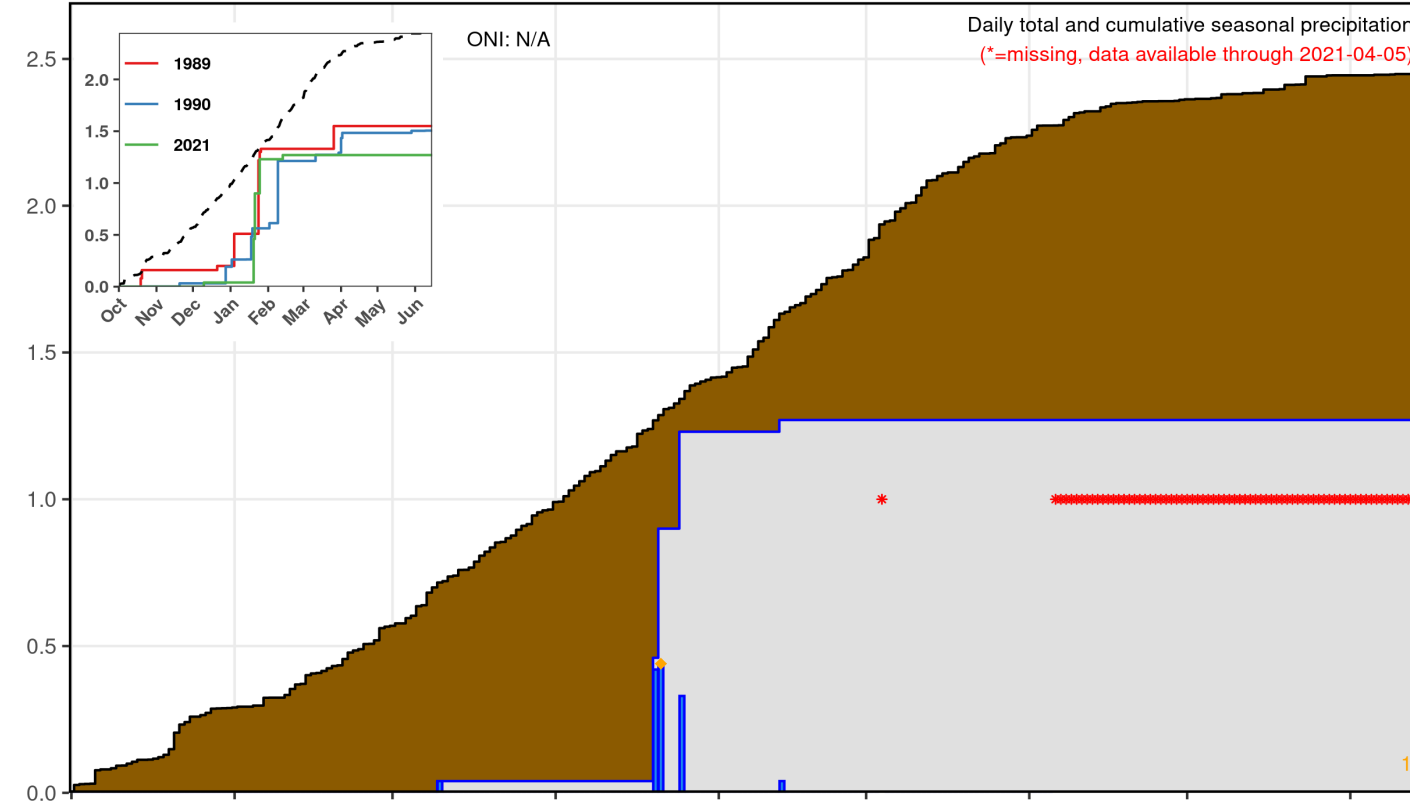
**Dry Spells**  
 Avg length: 22 days (avg: 11)  
 Max length: 71 days (avg: 63)



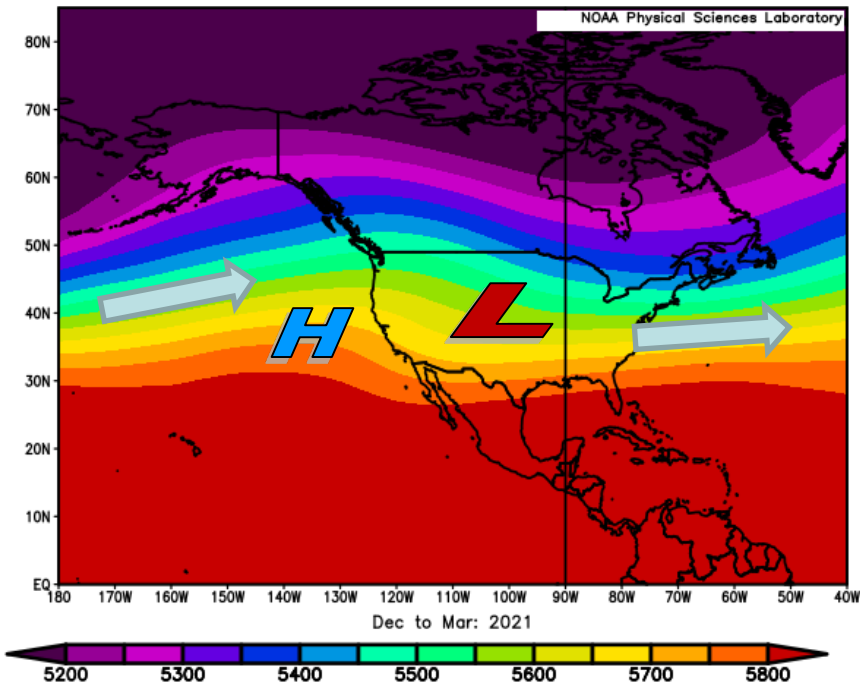
# Station Climate Summary: 10-01-2020 to 06-15-2021 (Cool Season)



**TACNA 3 NE**  
 Elevation (ft): 324  
 Period of record: 1970-2023  
 Years in record: 54  
 Precip rank: 41 (1-wettest)  
 Temp rank: 48 (1-warmest)  
 Missing in 2021: 72  
 Total snow (in): 0 (NaN % avg)



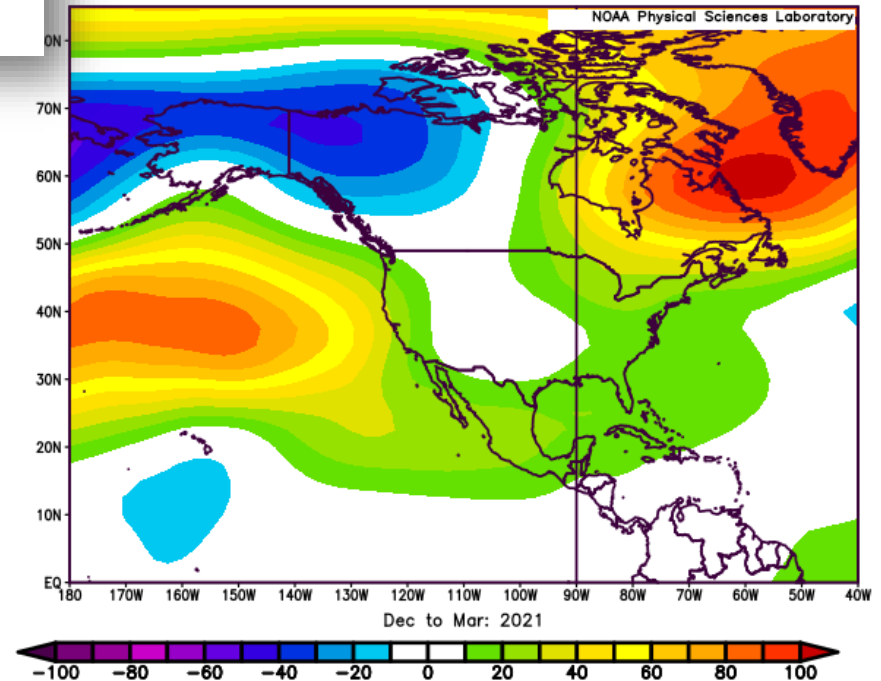
NCEP/NCAR Reanalysis  
500mb Geopotential Height (m) Composite Mean



Average Upper-level  
Weather Pattern  
(500mb level ~ 18,000 ft)  
Dec-March

Difference from average

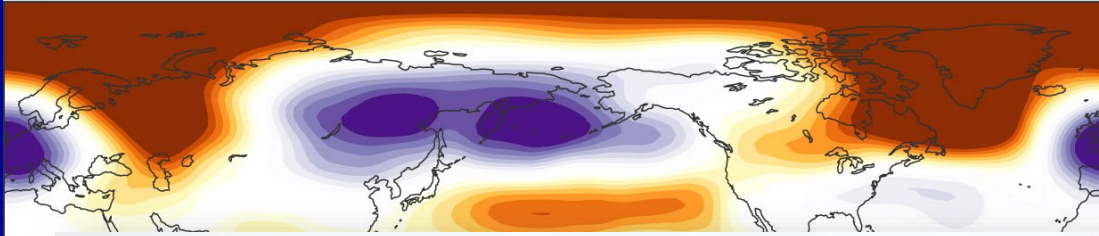
NCEP/NCAR Reanalysis  
500mb Geopotential Height (m) Composite Anomaly 1981-2010 climo



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



Air pressure anomalies for Dec 2020-Jan 2021



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What's New

Climate news, stories, images, & video  
(ClimateWatch Magazine)

News

How the Climate  
System Works

Climate Change &  
Global Warming

Natural Climate  
Patterns

Climate  
Impacts

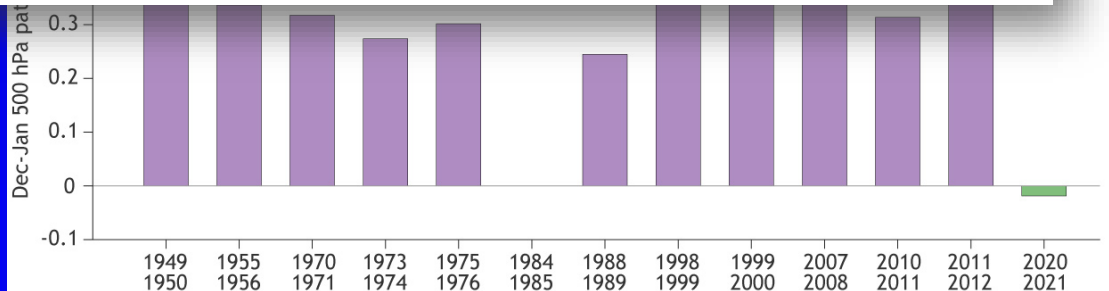
Obs  
Pre

Home » Did the Northern Hemisphere get the memo on this year's La Niña?

## Did the Northern Hemisphere get the memo on this year's La Niña?

Author: Nat Johnson

February 25, 2021



CSAP

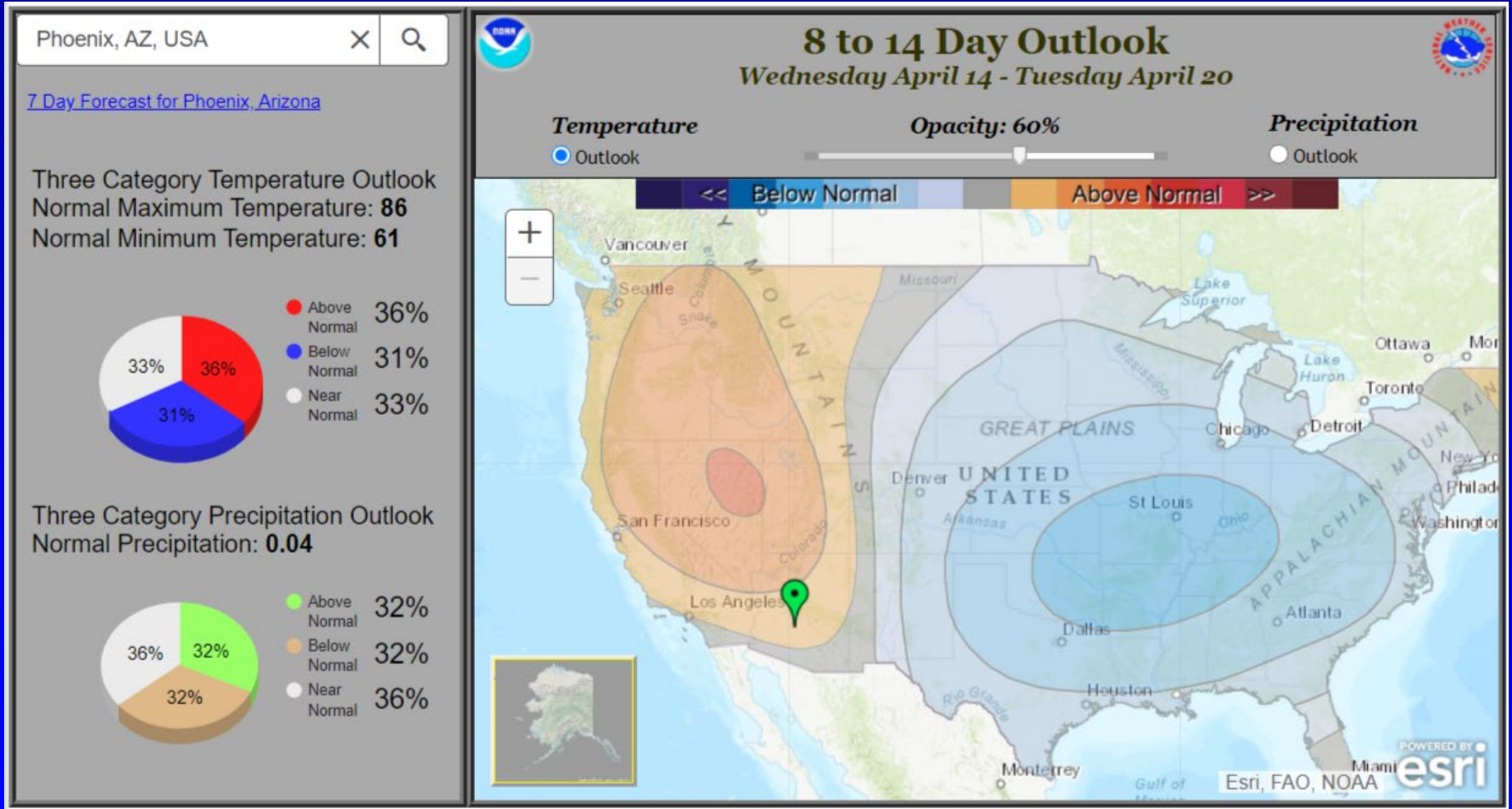
Climate Science Applications Program - University of Arizona

NOAA Climate.gov

# Weather and Seasonal Climate Outlooks



# 8-14 Day Temperature Outlook



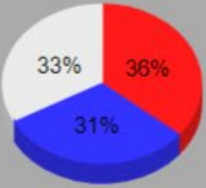
# 8-14 Day Precipitation Outlook

Phoenix, AZ, USA X Q

[7 Day Forecast for Phoenix, Arizona](#)

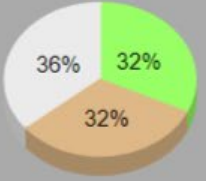
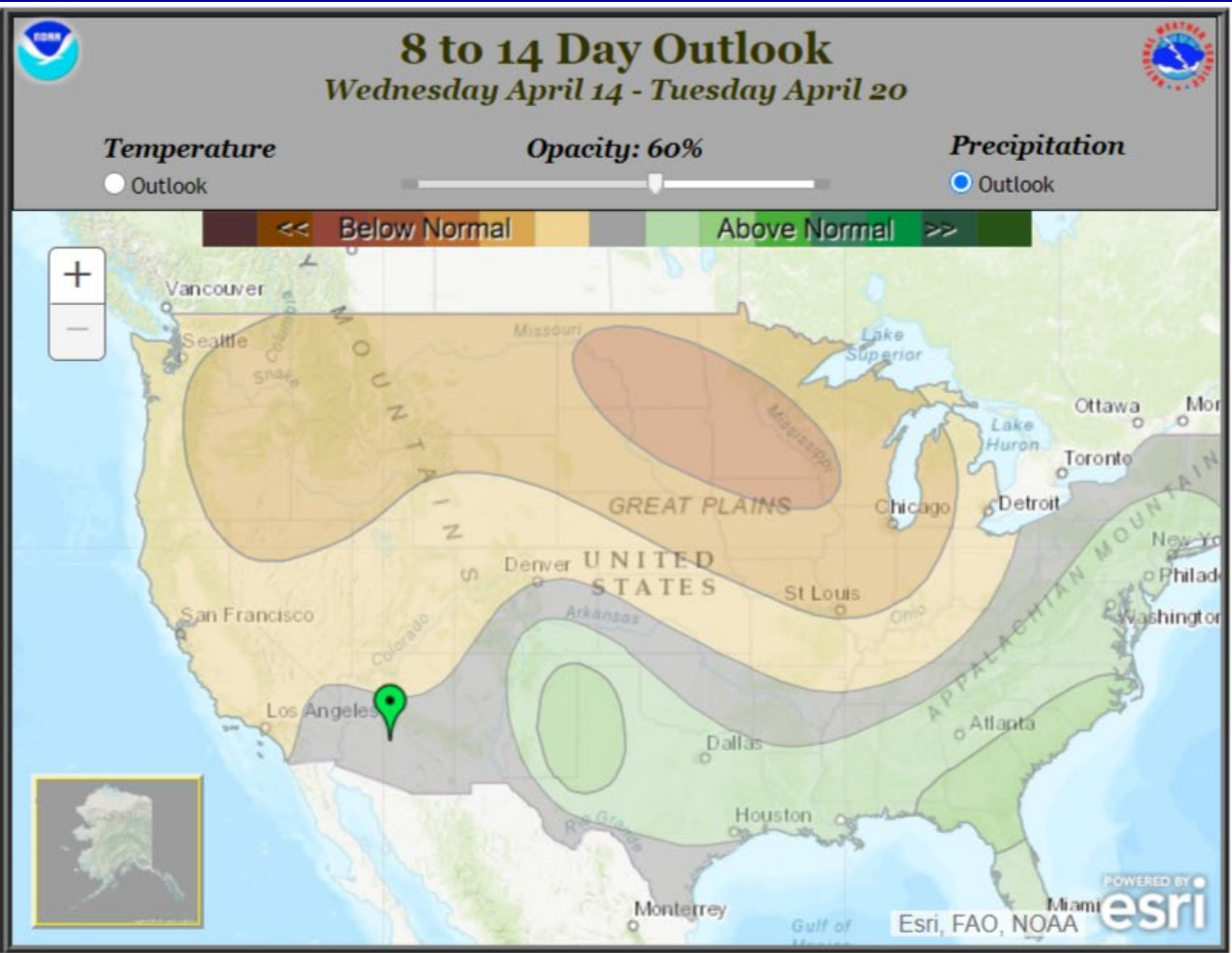
Three Category Temperature Outlook  
 Normal Maximum Temperature: **86**  
 Normal Minimum Temperature: **61**

<span style="color: red;">●</span> Above Normal	36%
<span style="color: blue;">●</span> Below Normal	31%
<span style="color: gray;">●</span> Near Normal	33%

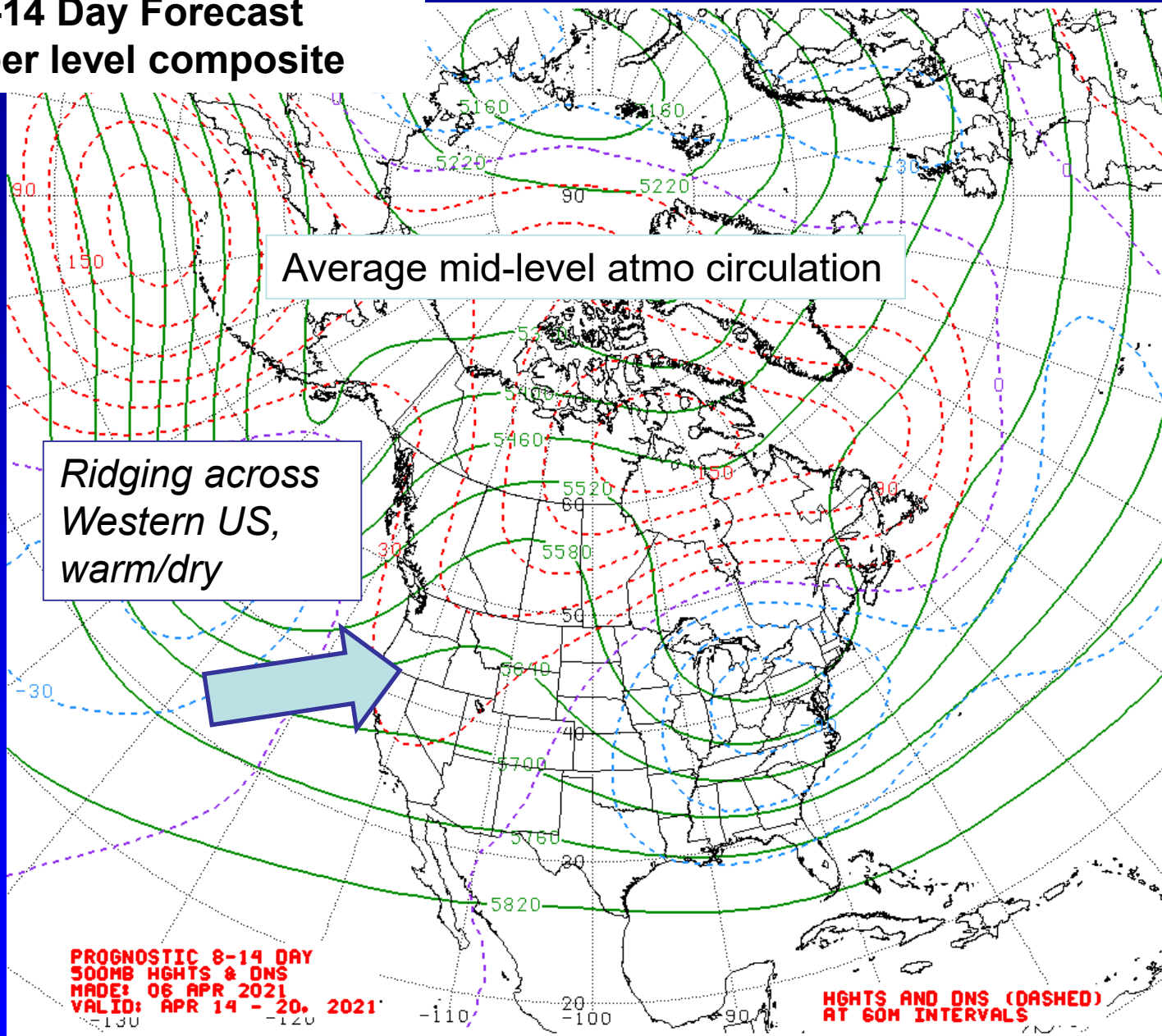


Three Category Precipitation Outlook  
 Normal Precipitation: **0.04**

<span style="color: green;">●</span> Above Normal	32%
<span style="color: orange;">●</span> Below Normal	32%
<span style="color: gray;">●</span> Near Normal	36%

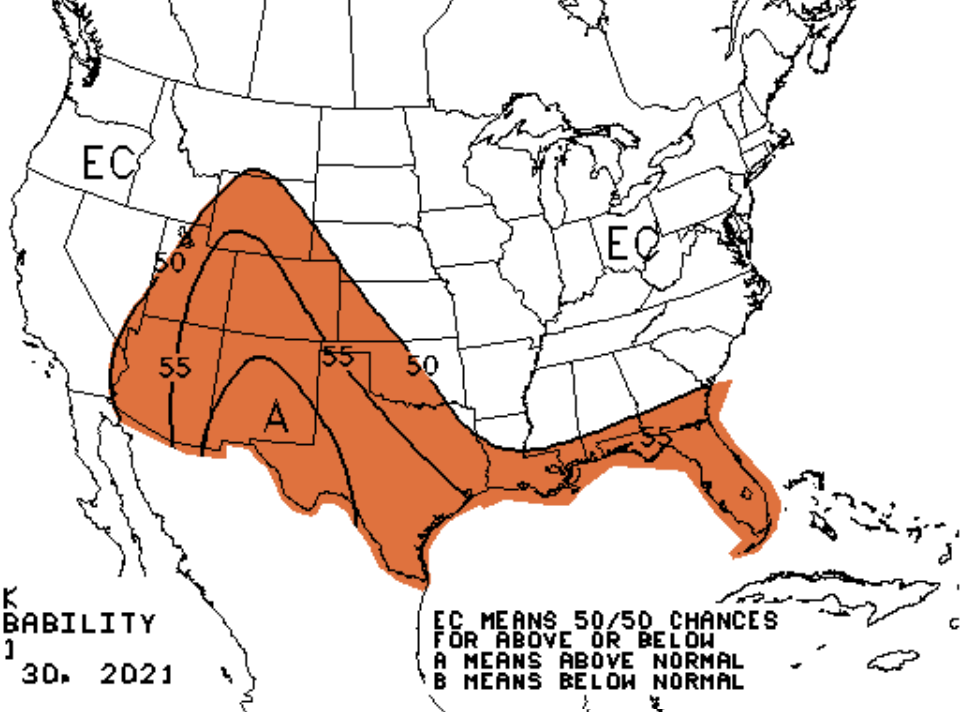



# 8-14 Day Forecast Upper level composite





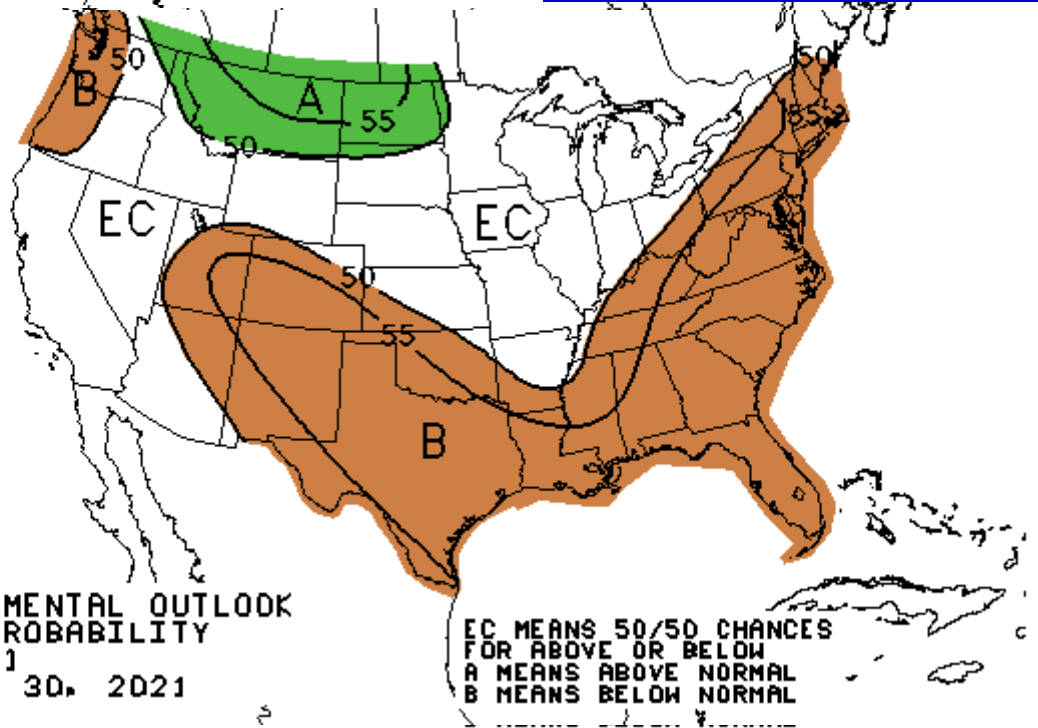
# Week 3-4 Forecasts (valid Apr 17-30)



WEEK 3-4 OUTLOOK  
TEMPERATURE PROBABILITY  
MADE 2 APR 2021  
VALID APR 17 - 30, 2021

La Niña pattern  
waning, entering  
climo dry season

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



WEEK 3-4 EXPERIMENTAL OUTLOOK  
PRECIPITATION PROBABILITY  
MADE 2 APR 2021  
VALID APR 17 - 30, 2021



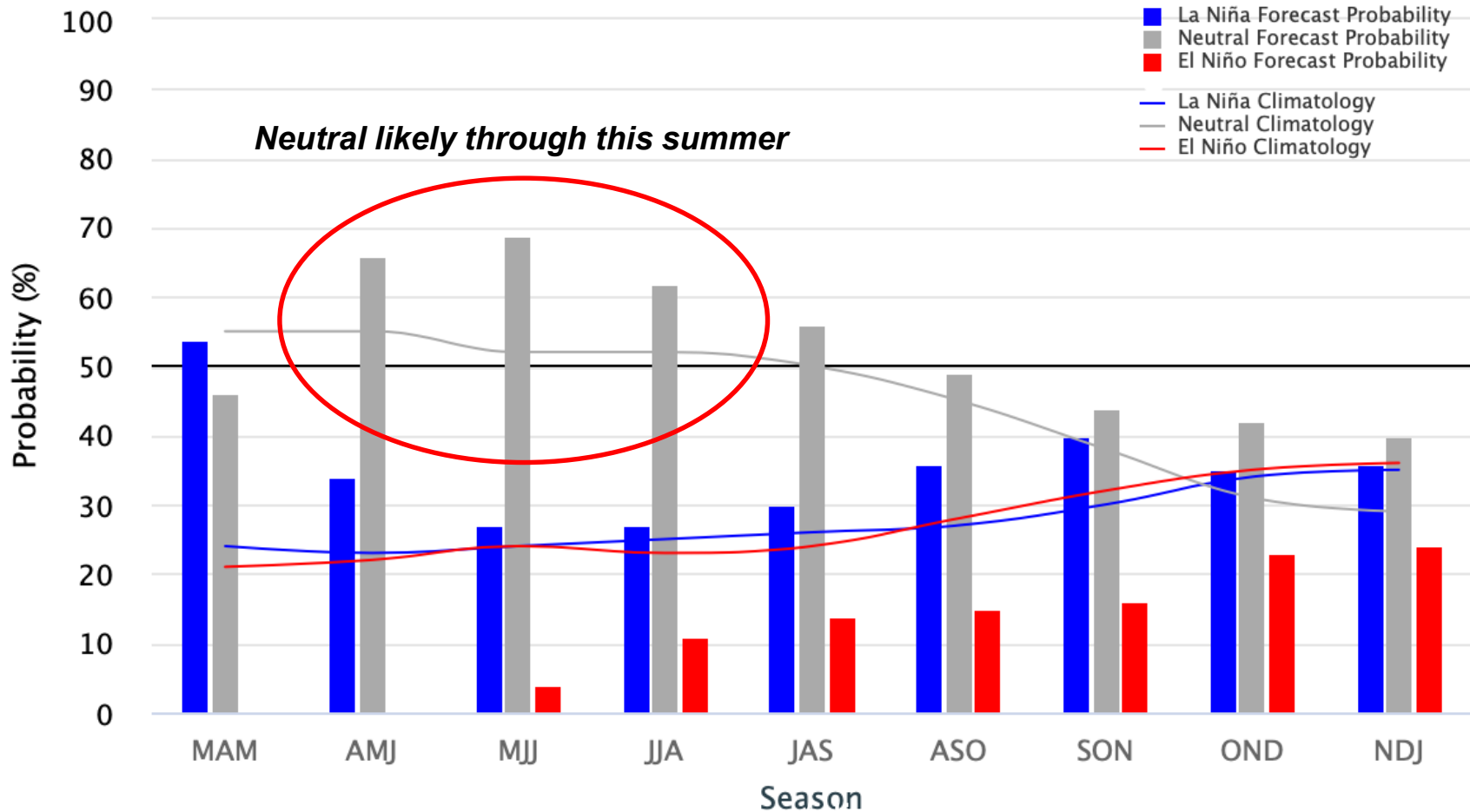
Climate Science Applications Pr

# La Niña pattern is winding down

Mid-March 2021 IRI/CPC Model-Based Probabilistic ENSO Forecasts

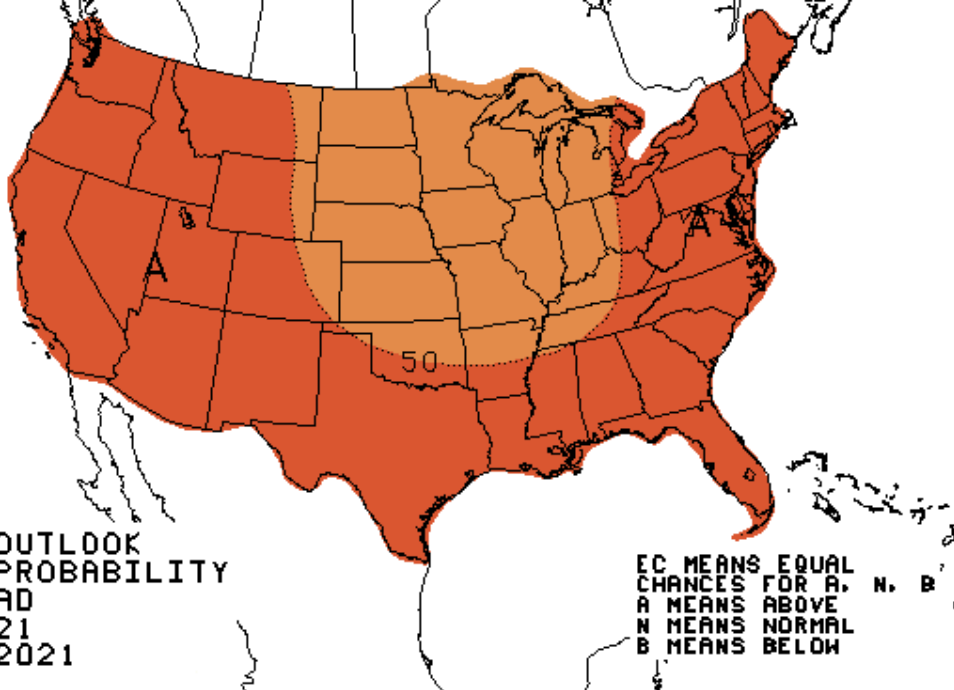
ENSO state based on NINO3.4 SST Anomaly

Neutral ENSO:  $-0.5\text{ }^{\circ}\text{C}$  to  $0.5\text{ }^{\circ}\text{C}$

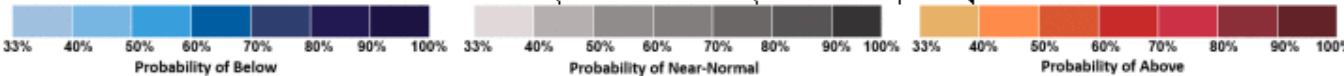




THREE-MONTH OUTLOOK  
TEMPERATURE PROBABILITY  
3.5 MONTH LEAD  
VALID JAS 2021  
MADE 18 MAR 2021



EC MEANS EQUAL  
CHANCES FOR A, N, B  
A MEANS ABOVE  
N MEANS NORMAL  
B MEANS BELOW



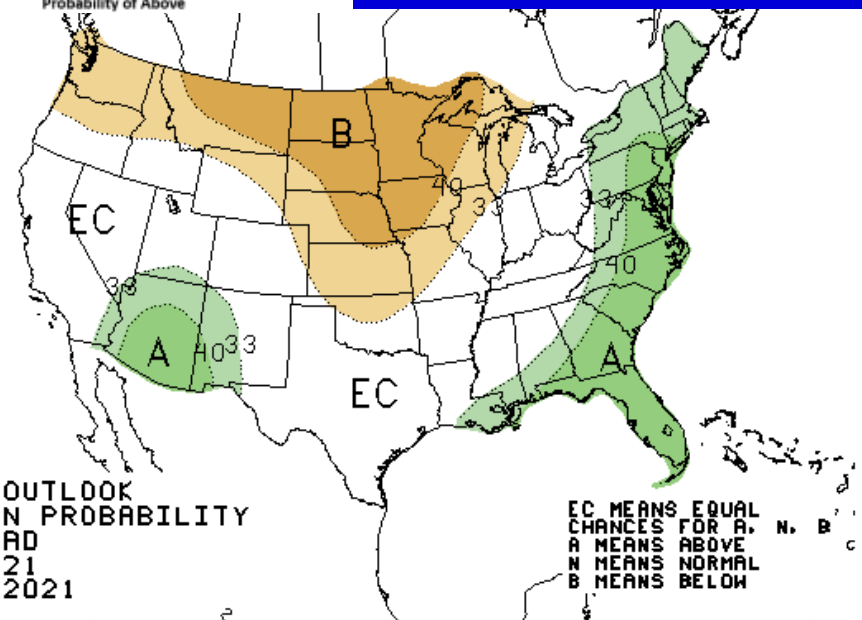
# July-Aug-Sept Climate Outlook

Early monsoon outlook  
suggests early start and  
enhanced rainfall for July-Sep

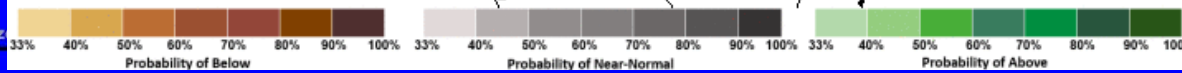
[https://www.cpc.ncep.noaa.gov/products/prediction/s/long\\_range/seasonal.php?lead=4](https://www.cpc.ncep.noaa.gov/products/prediction/s/long_range/seasonal.php?lead=4)



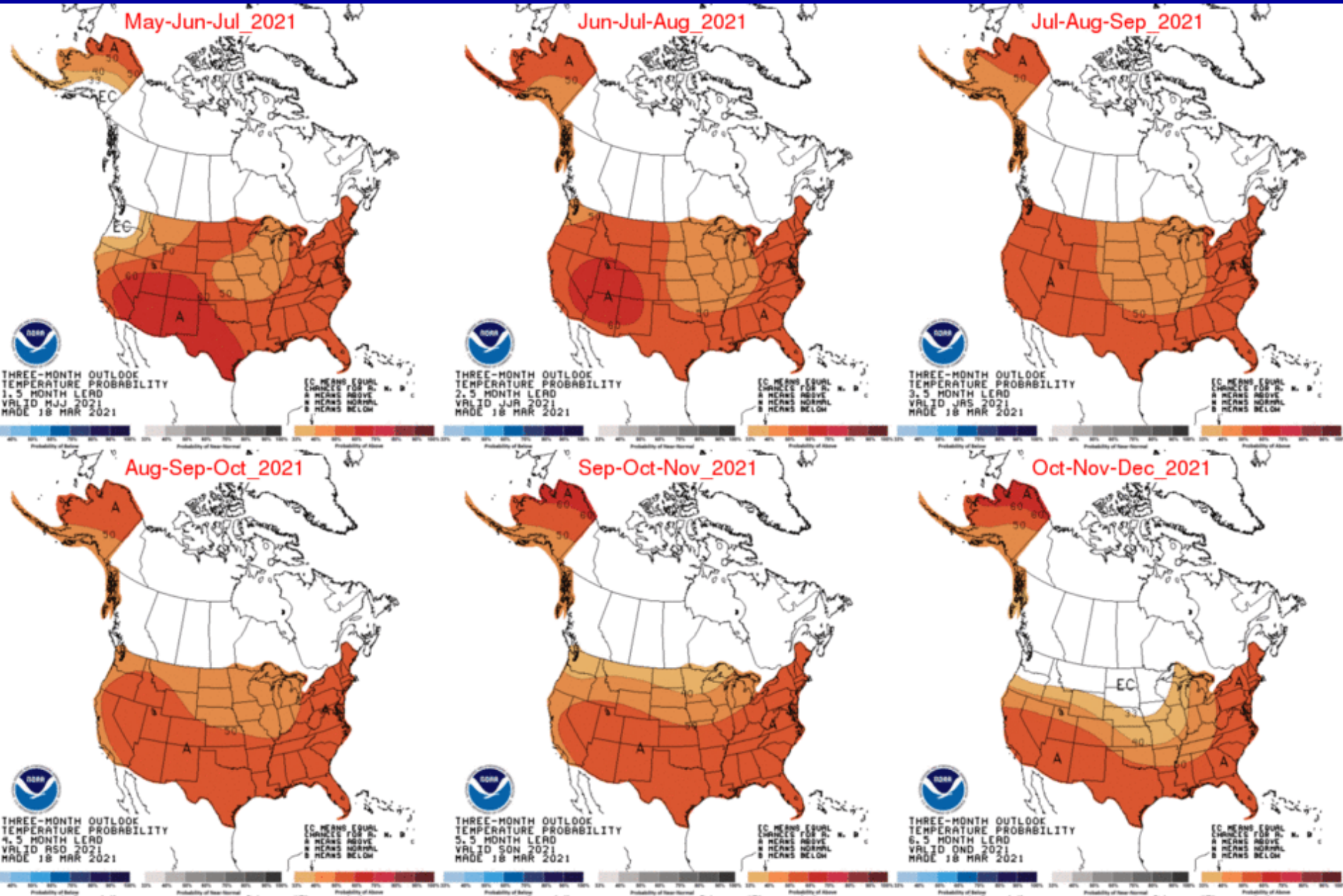
THREE-MONTH OUTLOOK  
PRECIPITATION PROBABILITY  
3.5 MONTH LEAD  
VALID JAS 2021  
MADE 18 MAR 2021



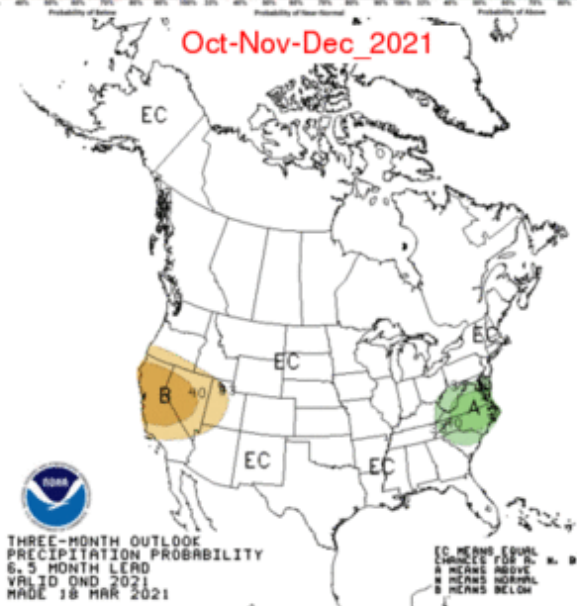
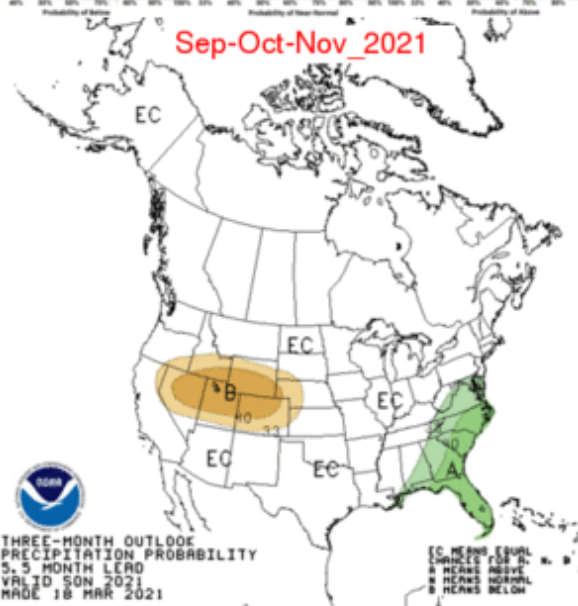
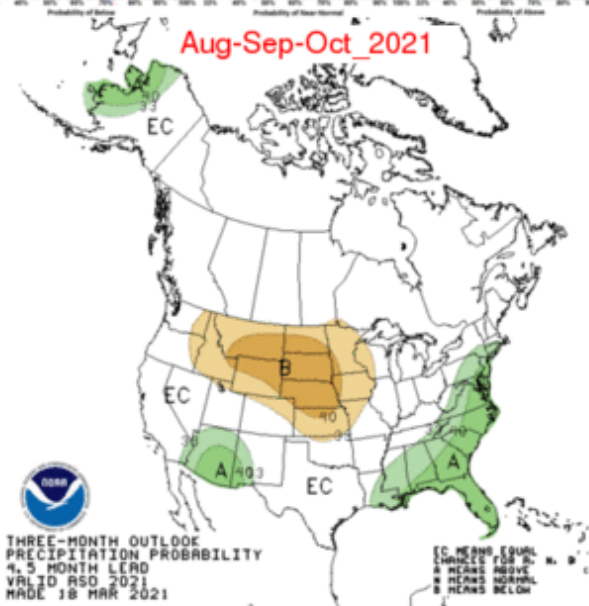
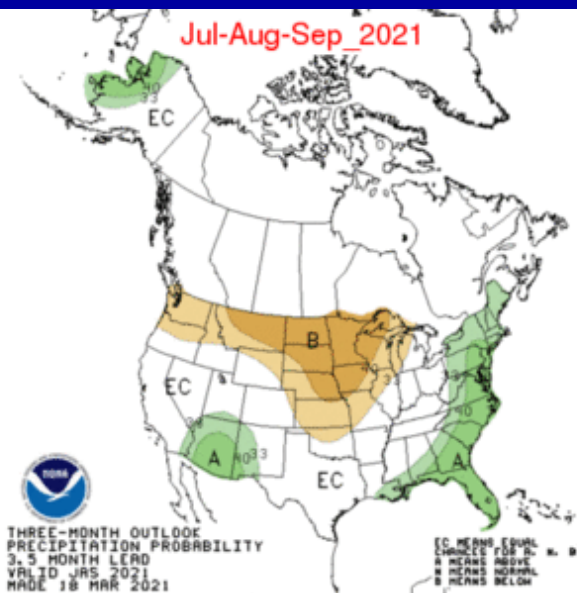
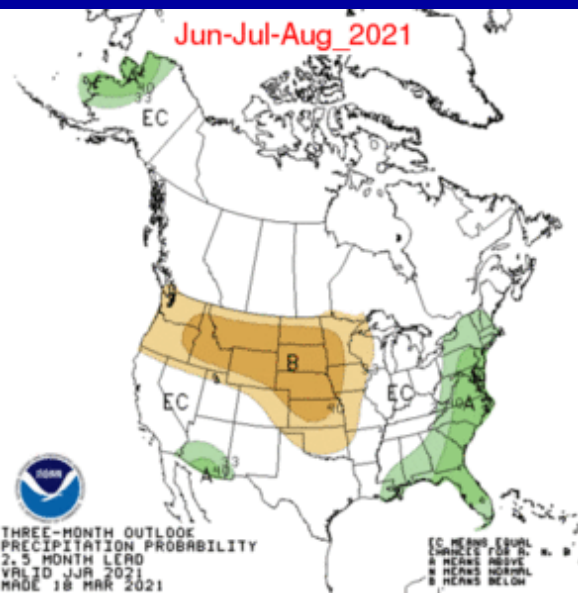
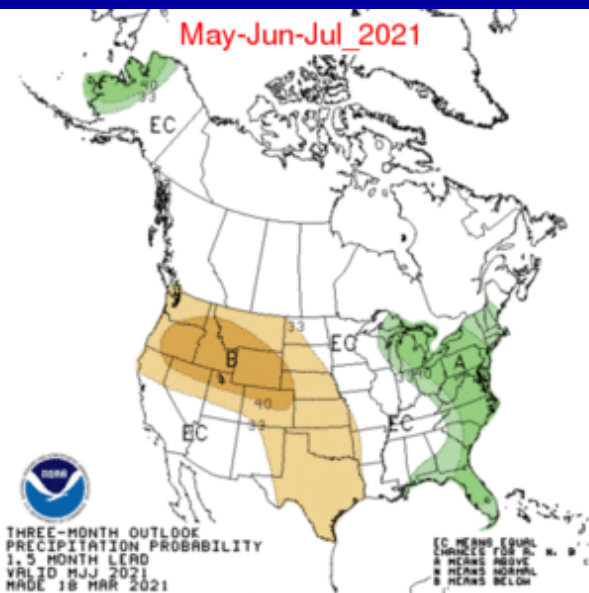
EC MEANS EQUAL  
CHANCES FOR A, N, B  
A MEANS ABOVE  
N MEANS NORMAL  
B MEANS BELOW



# Seasonal temperature outlooks



# Seasonal precipitation outlooks



# Closing Points

- La Niña conditions have been present and most likely impacting AZ weather since November
- Only major precipitation event of the entire winter occurred in late January, very few events otherwise
- Overall, drier-than-average conditions over last 4-months and near-average temperatures
- Drought conditions continue moving into climatologically dry season
- Short-term outlooks suggest warmer-than-average temperatures over next couple of weeks and most likely rest of spring season
- Early start to monsoon? Stay tuned...



# Thanks!

[crimmins@arizona.edu](mailto:crimmins@arizona.edu)

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

