

ODA/ODF Seasonal Climate Forecast November 2021 – February 2022

Winter Weather Forecast Conference

Oregon Chapter of the AMS

October 23, 2021

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Oregon Department of Agriculture (ODA) - Oregon Department of Forestry (ODF)
Production support: Diana Walker; Jacob Crusier; Andy Zimmerman; Julie Waters

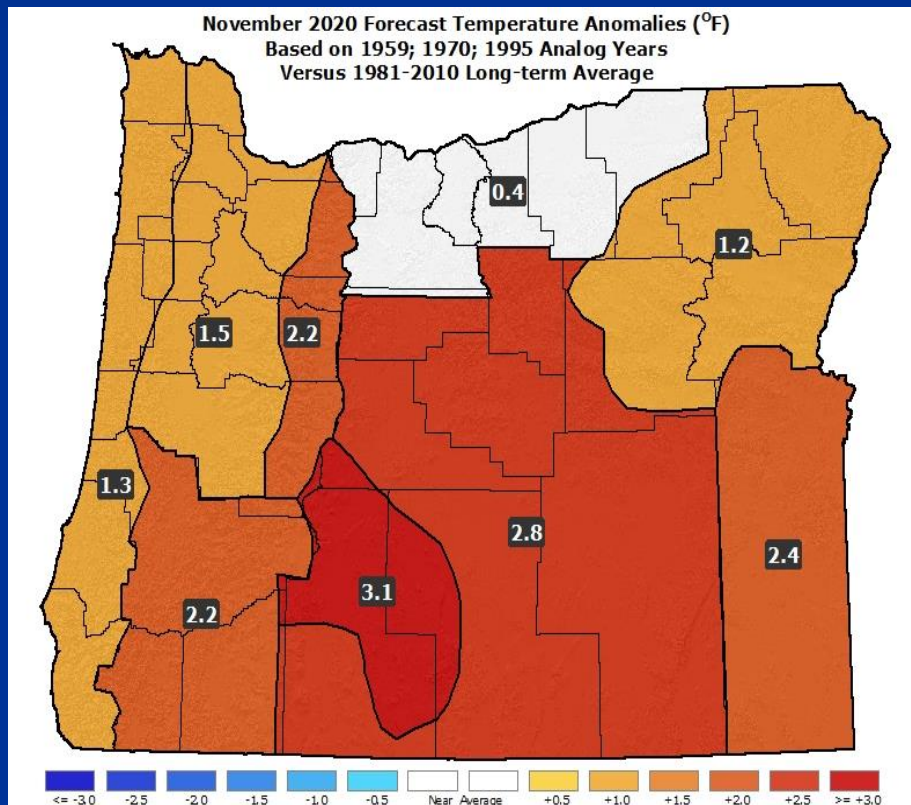
Start by Looking Back...



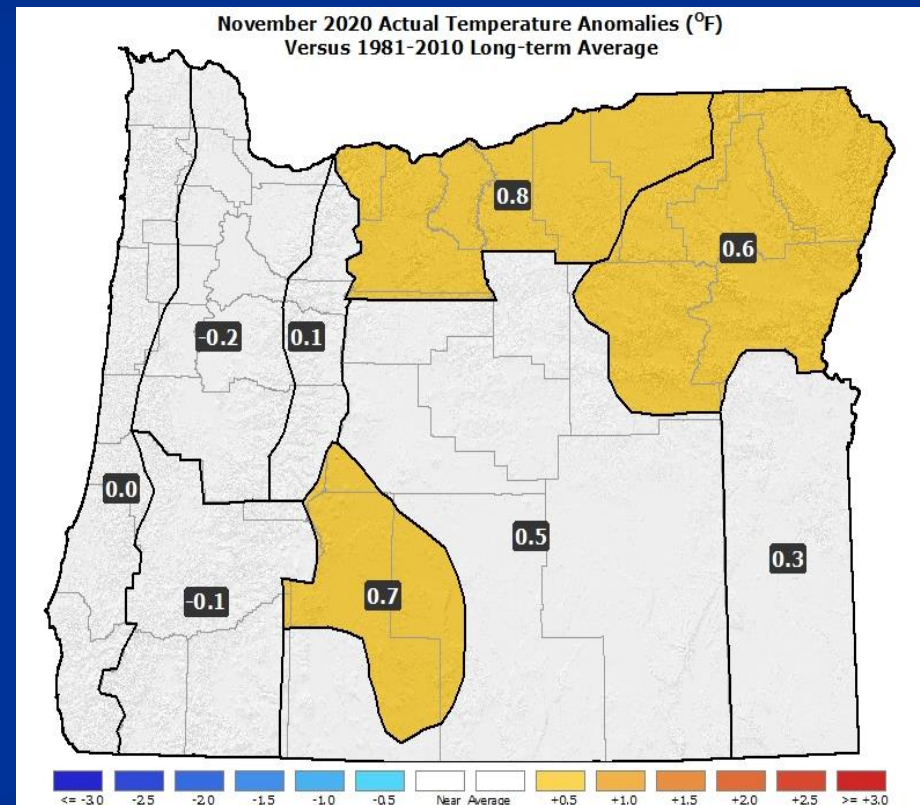
November 2020

(Forecast)/(Actual)

Forecast Temperatures



Actual Temperatures

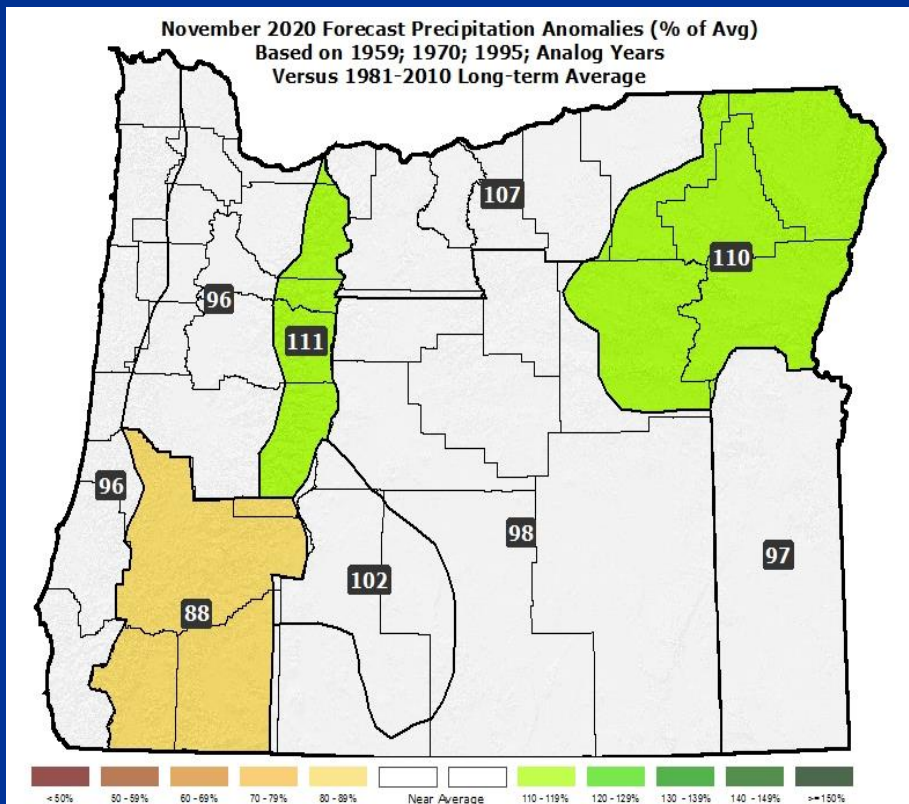


Data courtesy of the National Centers for Environmental Information (NCEI)

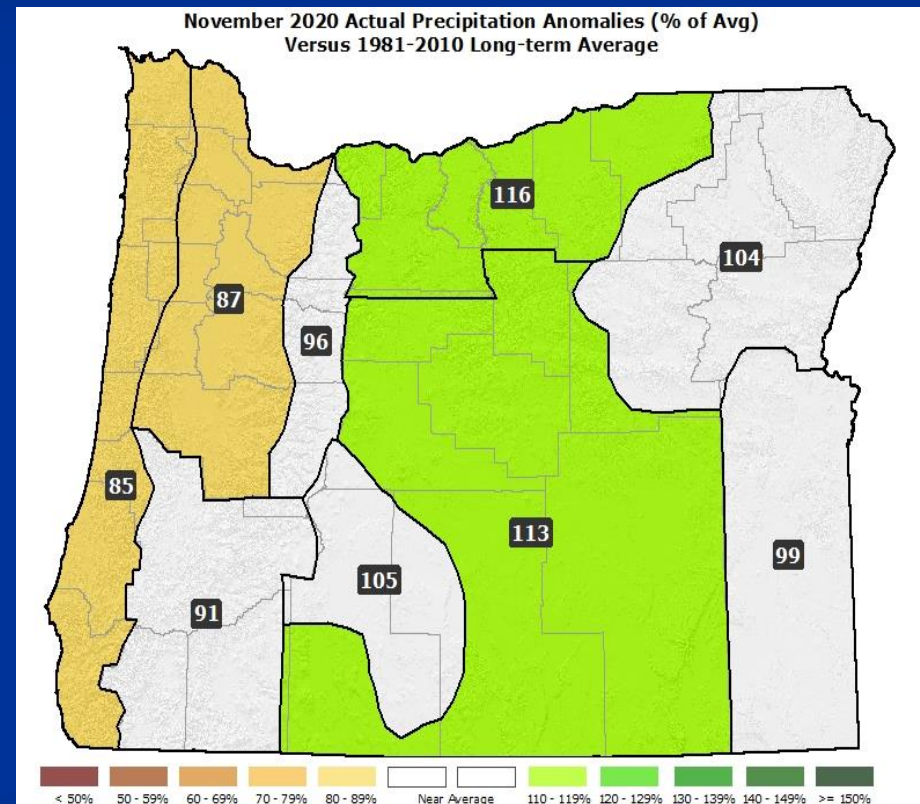
November 2020

(Forecast)/(Actual)

Forecast Precipitation



Actual Precipitation

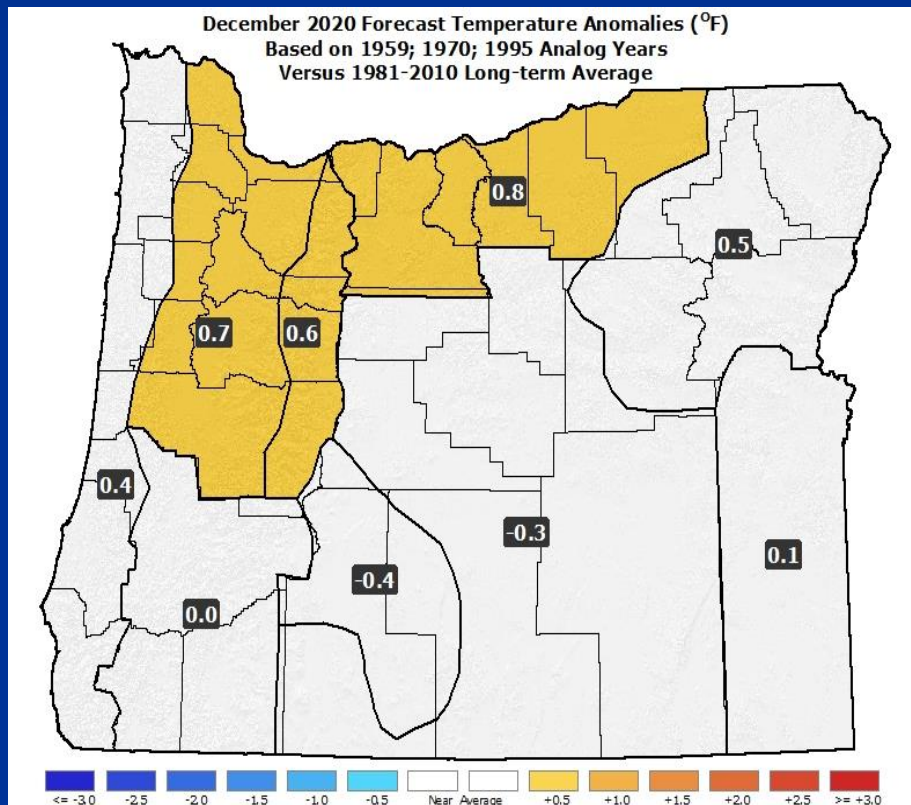


Data courtesy of the National Centers for Environmental Information (NCEI)

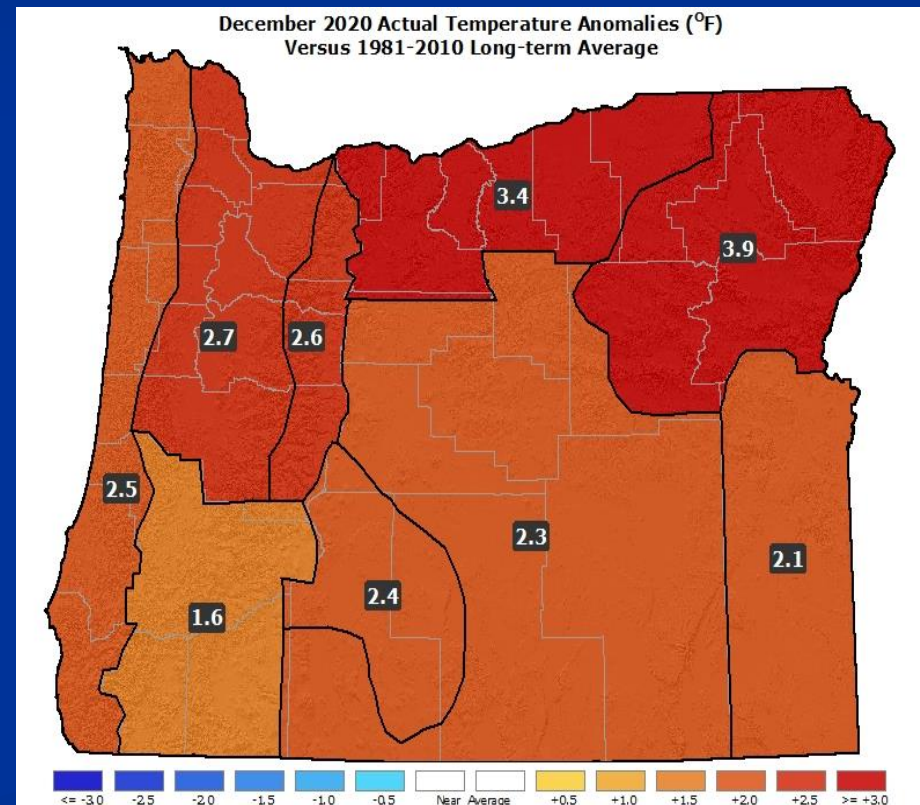
December 2020

(Forecast)/(Actual)

Forecast Temperatures



Actual Temperatures

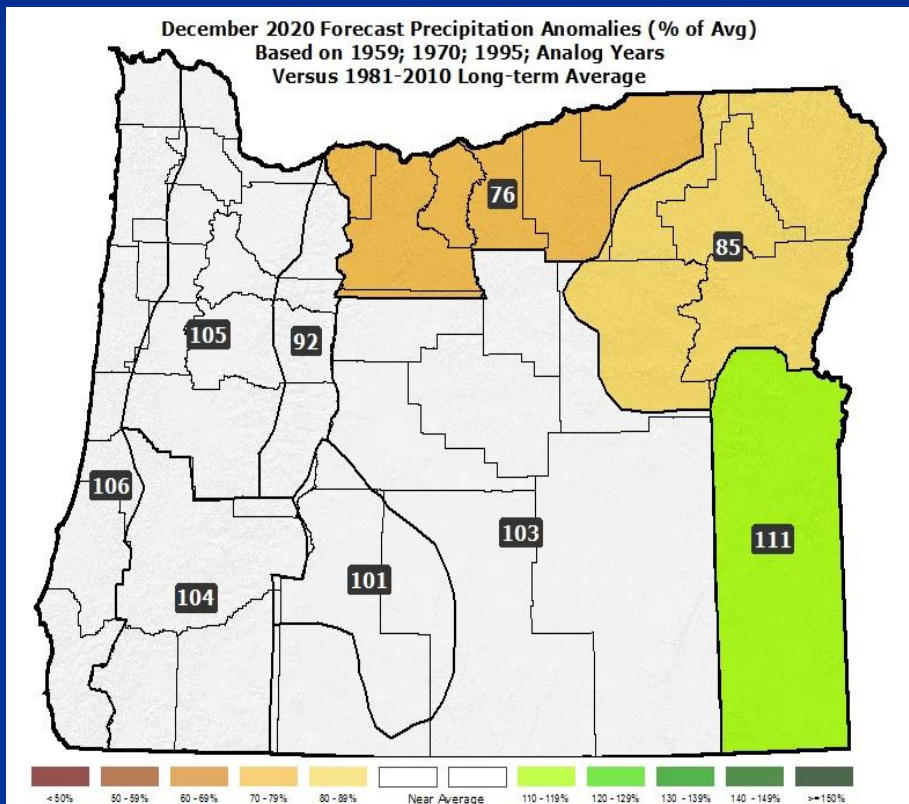


Data courtesy of the National Centers for Environmental Information (NCEI)

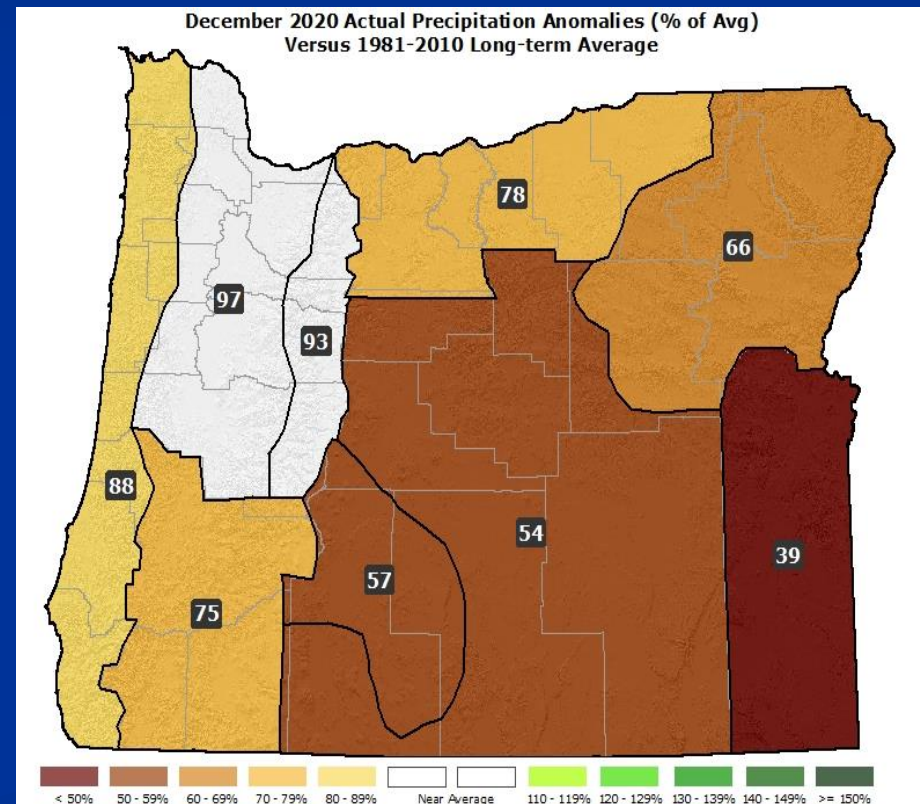
December 2020

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Forecast Precipitation



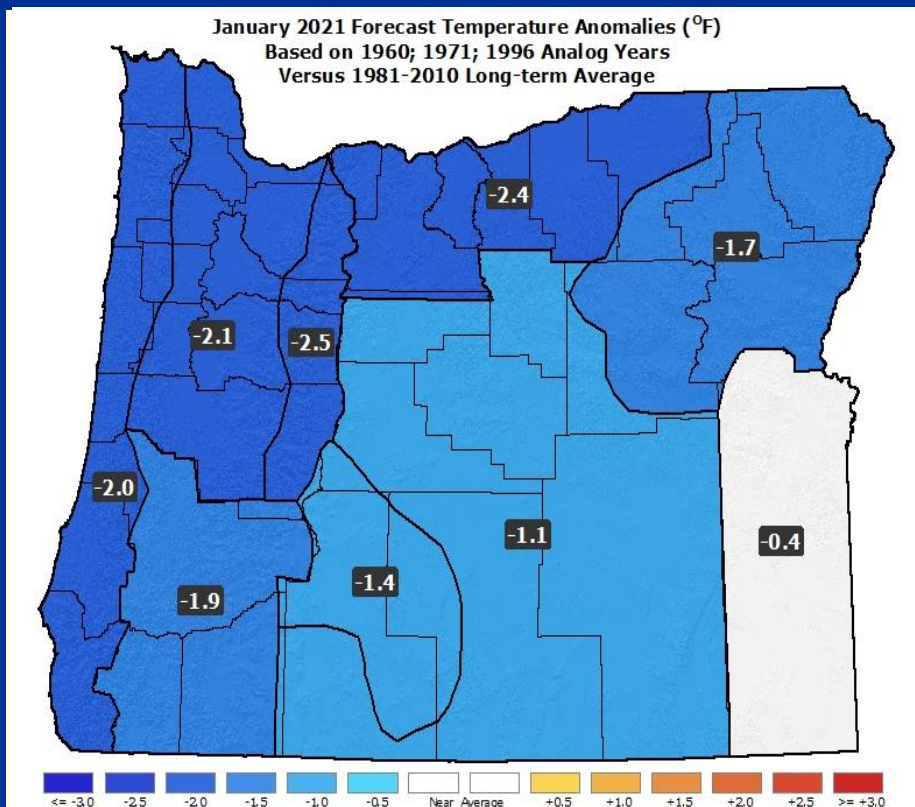
Actual Precipitation



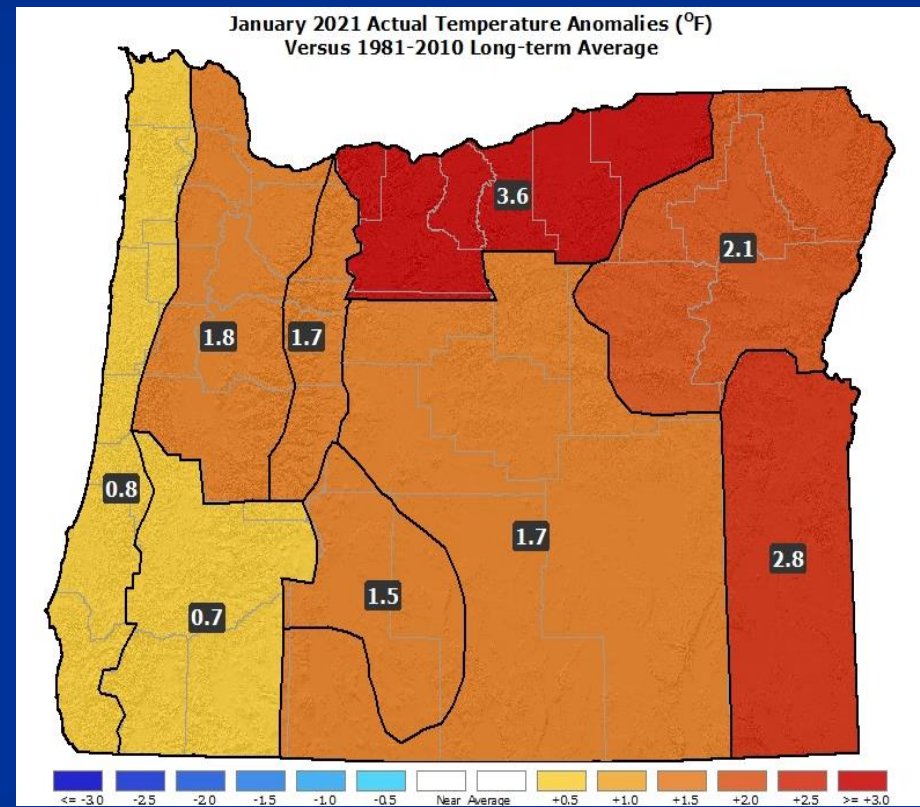
Data courtesy of the National Centers for Environmental Information (NCEI)

January 2021 (Forecast)/(Actual)

Forecast Temperatures



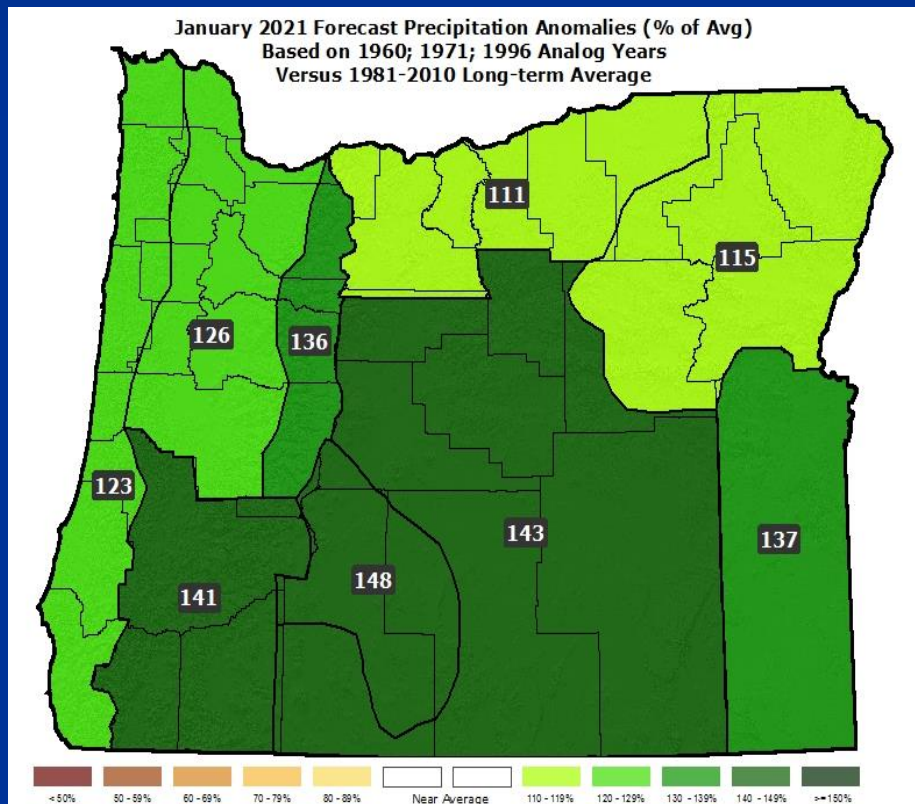
Actual Temperatures



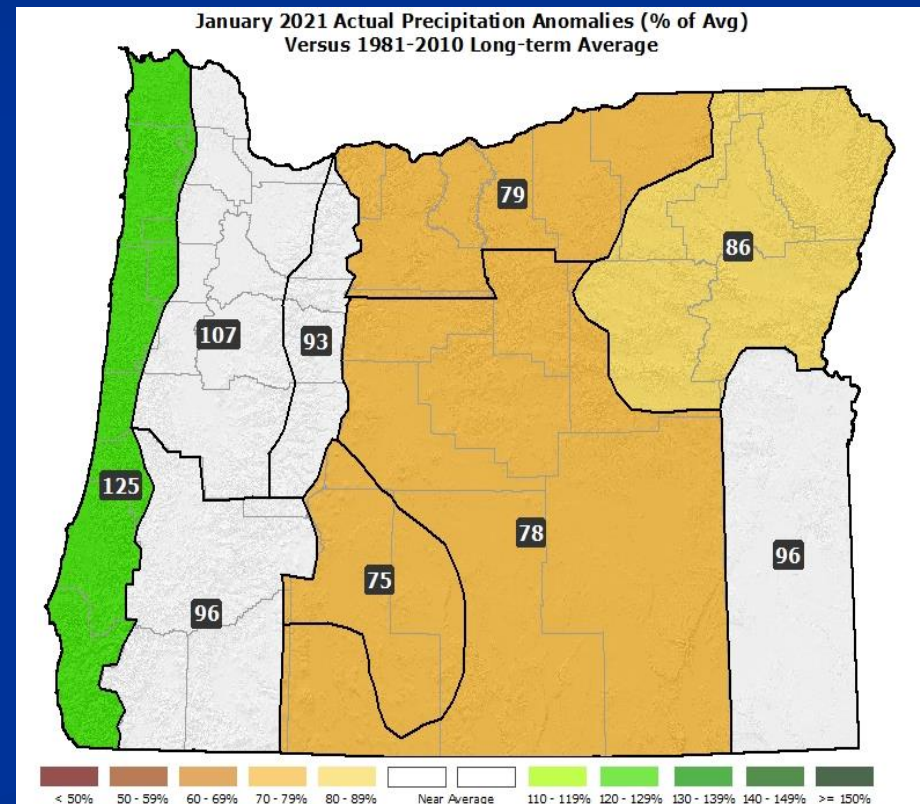
Data courtesy of the National Centers for Environmental Information (NCEI)

January 2021 (Forecast)/(Actual)

Forecast Precipitation



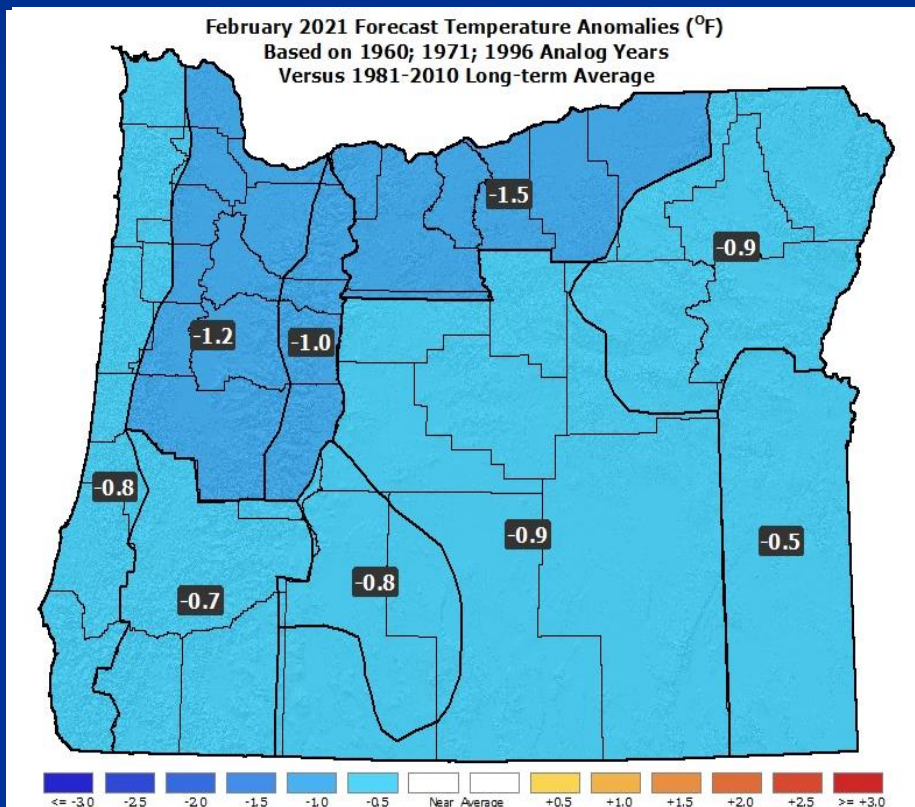
Actual Precipitation



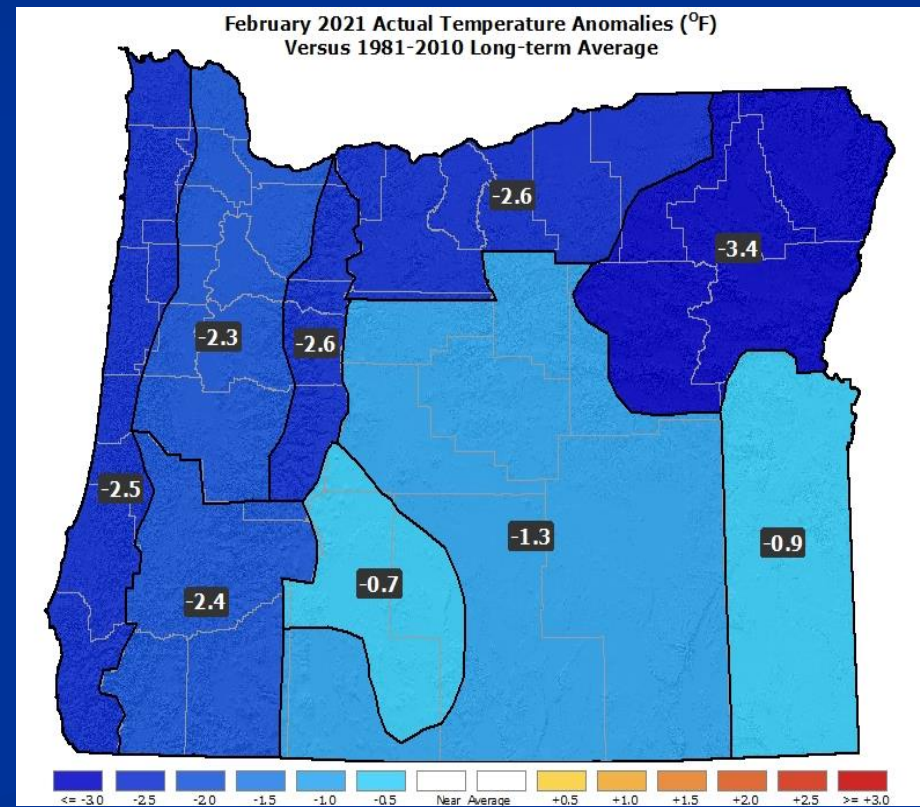
Data courtesy of the National Centers for Environmental Information (NCEI)

February 2021 (Forecast)/(Actual)

Forecast Temperatures



Actual Temperatures

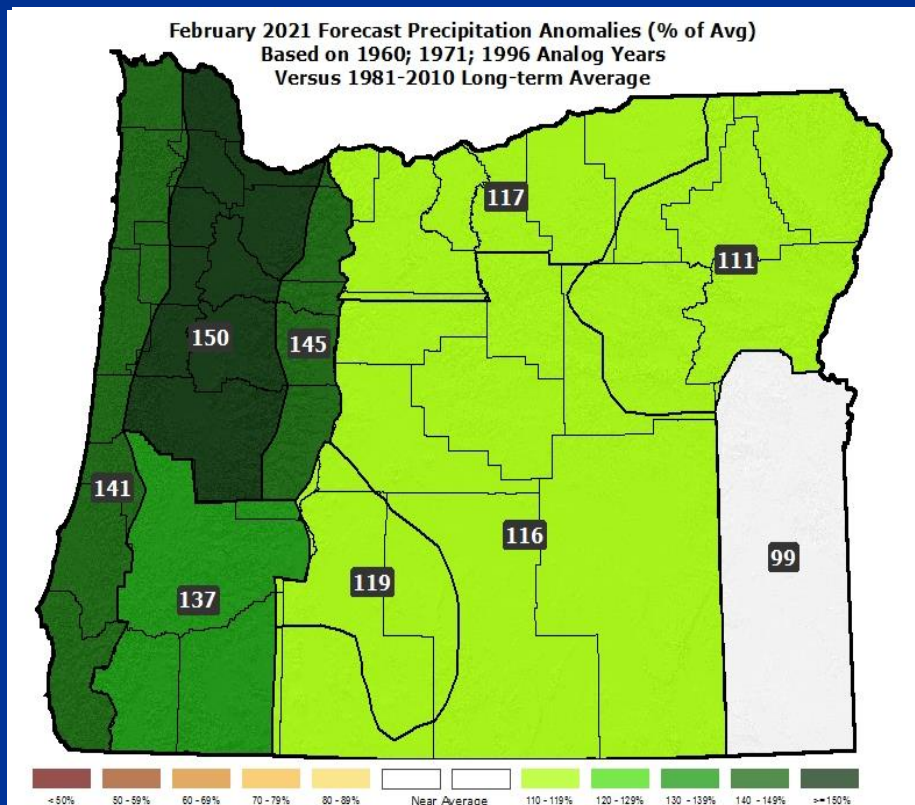


Data courtesy of the National Centers for Environmental Information (NCEI)

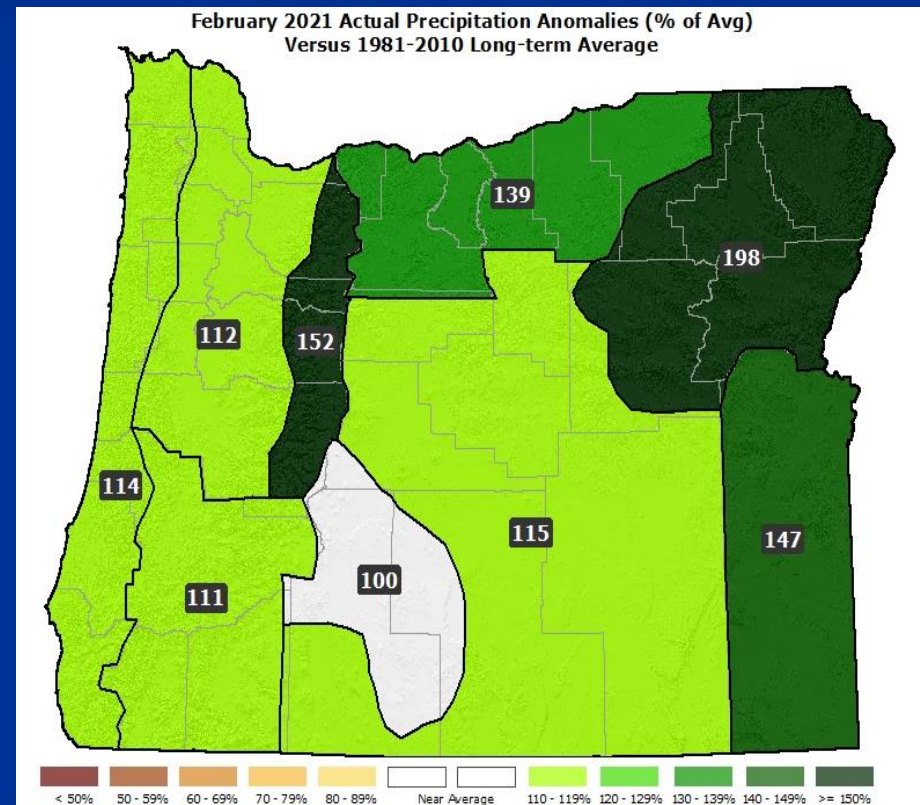
February 2021

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Actual Precipitation

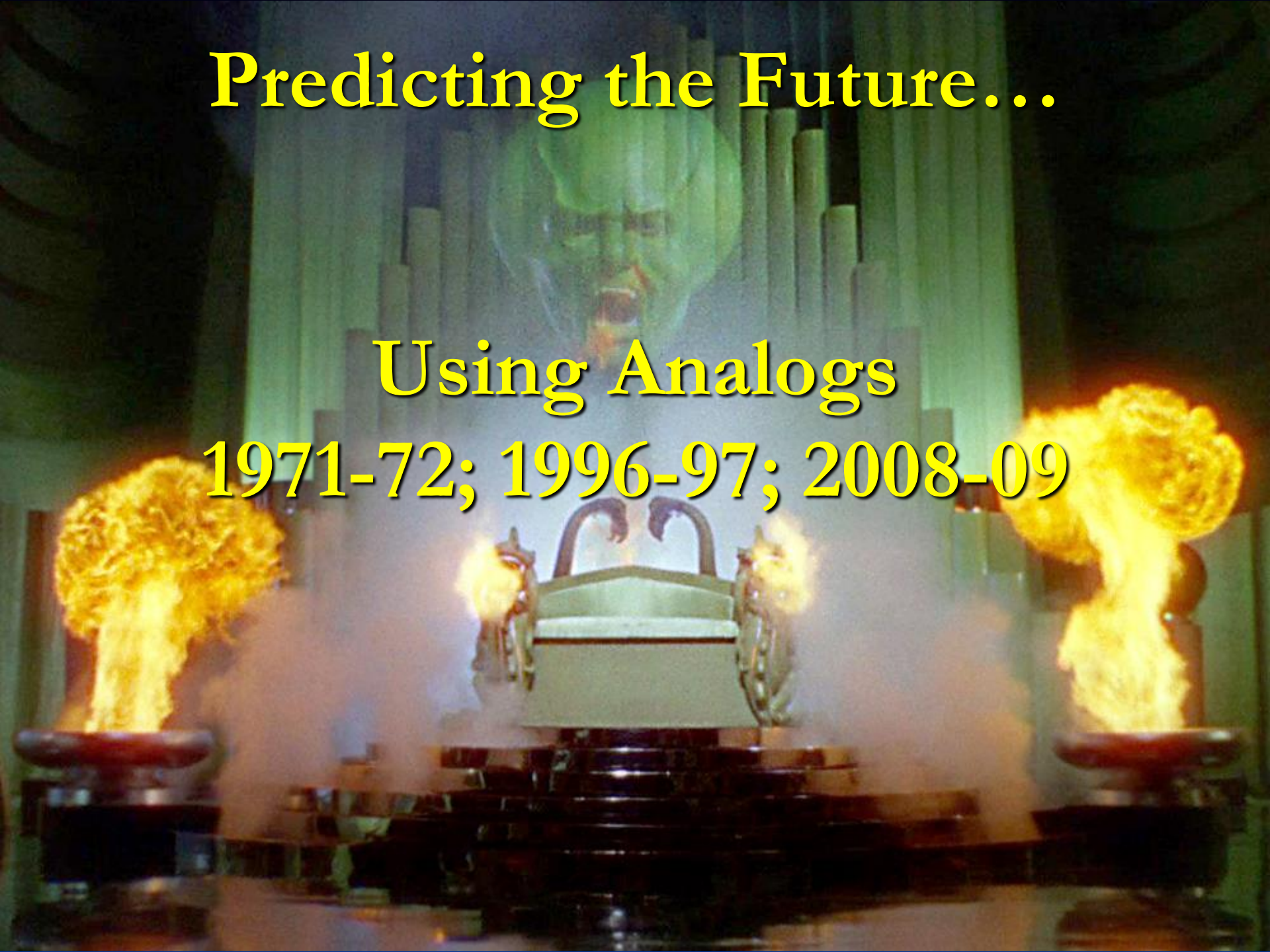


Data courtesy of the National Centers for Environmental Information (NCEI)

Predicting the Future...

Using Analogs

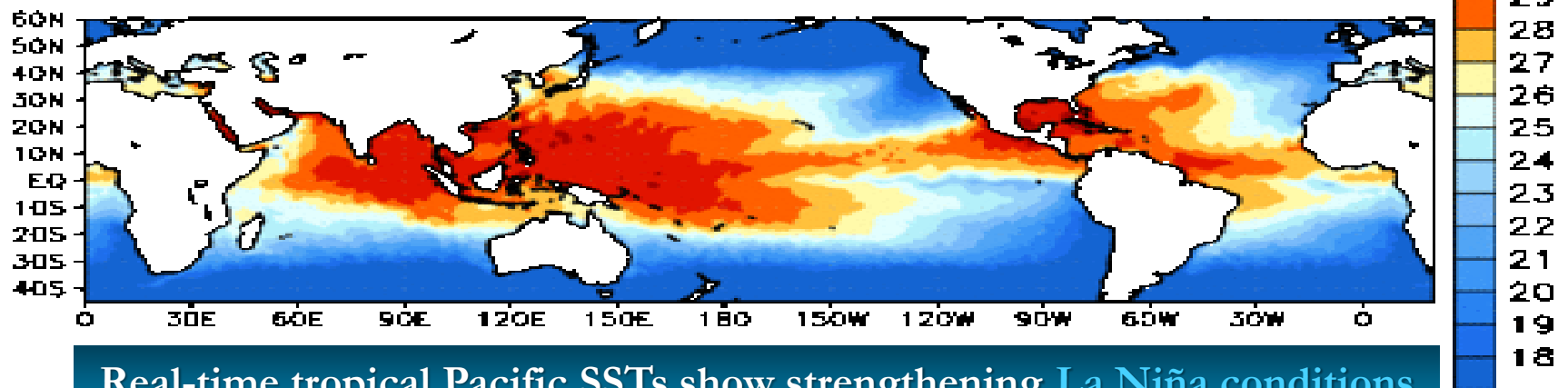
1971-72; 1996-97; 2008-09



...Follow the Pacific Ocean

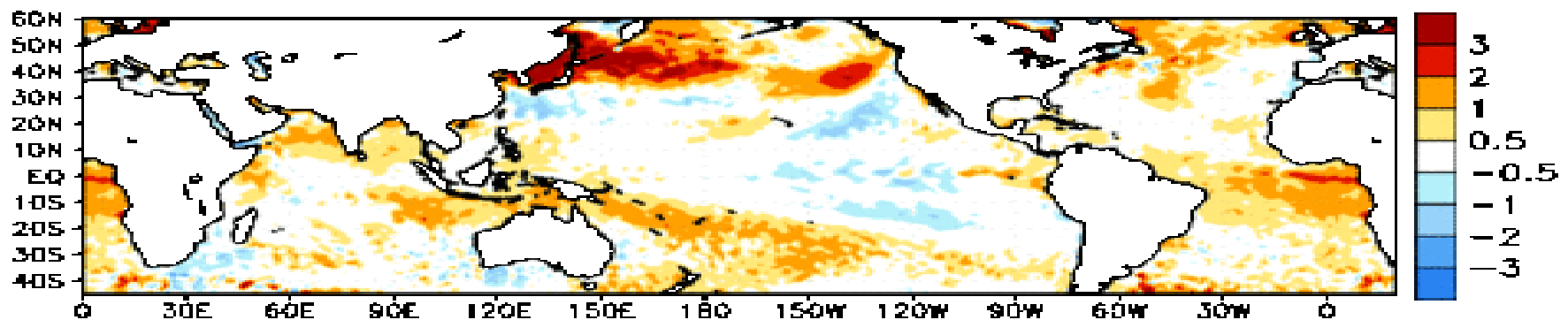
Time Series of SSTs (top) / Anomalies (bottom)

Week centered on 28 JUL 2021
SST (°C)



Real-time tropical Pacific SSTs show strengthening **La Niña** conditions

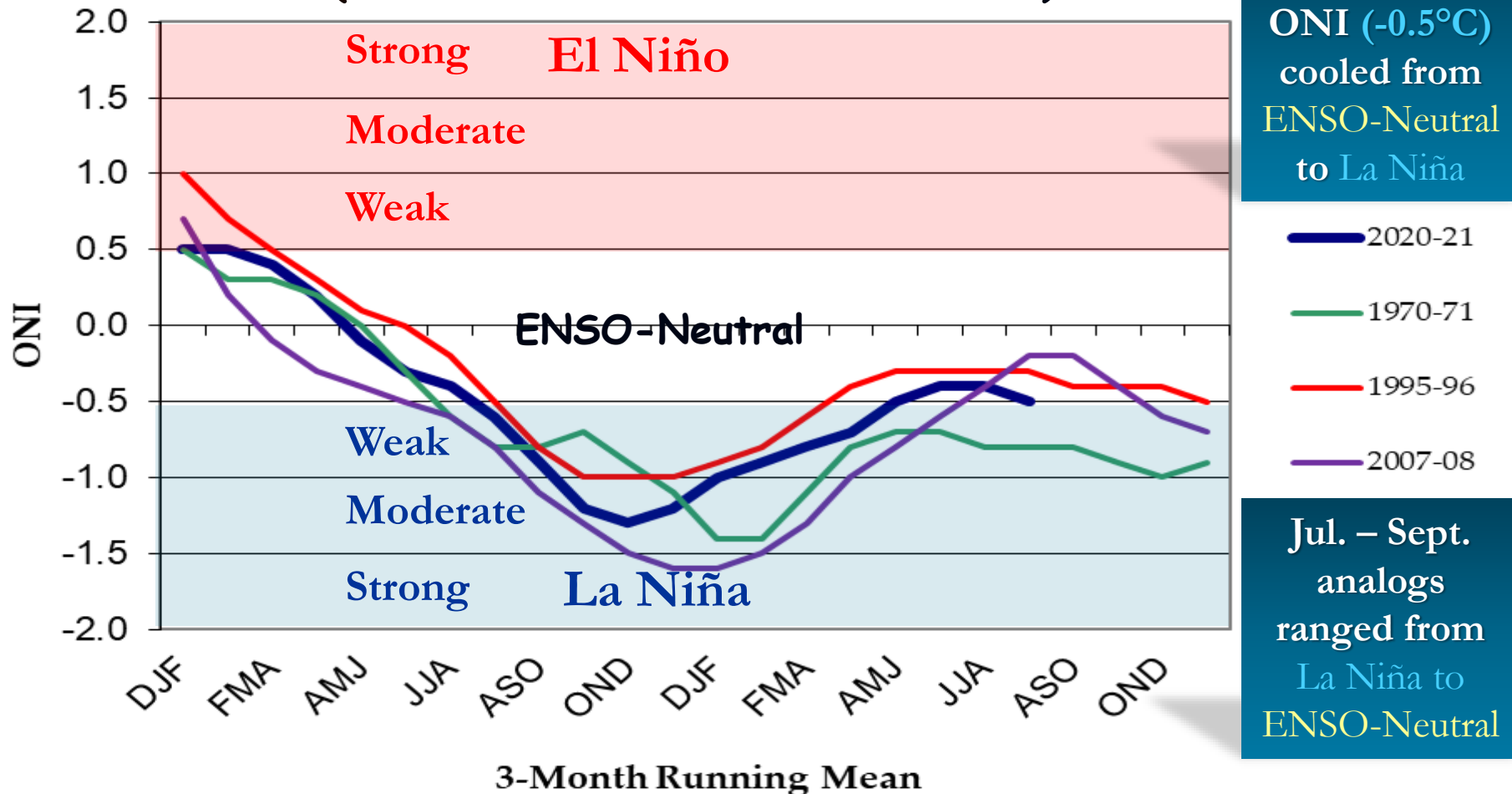
Anomalies (°C)



Tropical Pacific Ocean

ONI* values from the top "analog years"
compared with the current period (2020-21)

(1970-71; 1995-96; 2007-08)

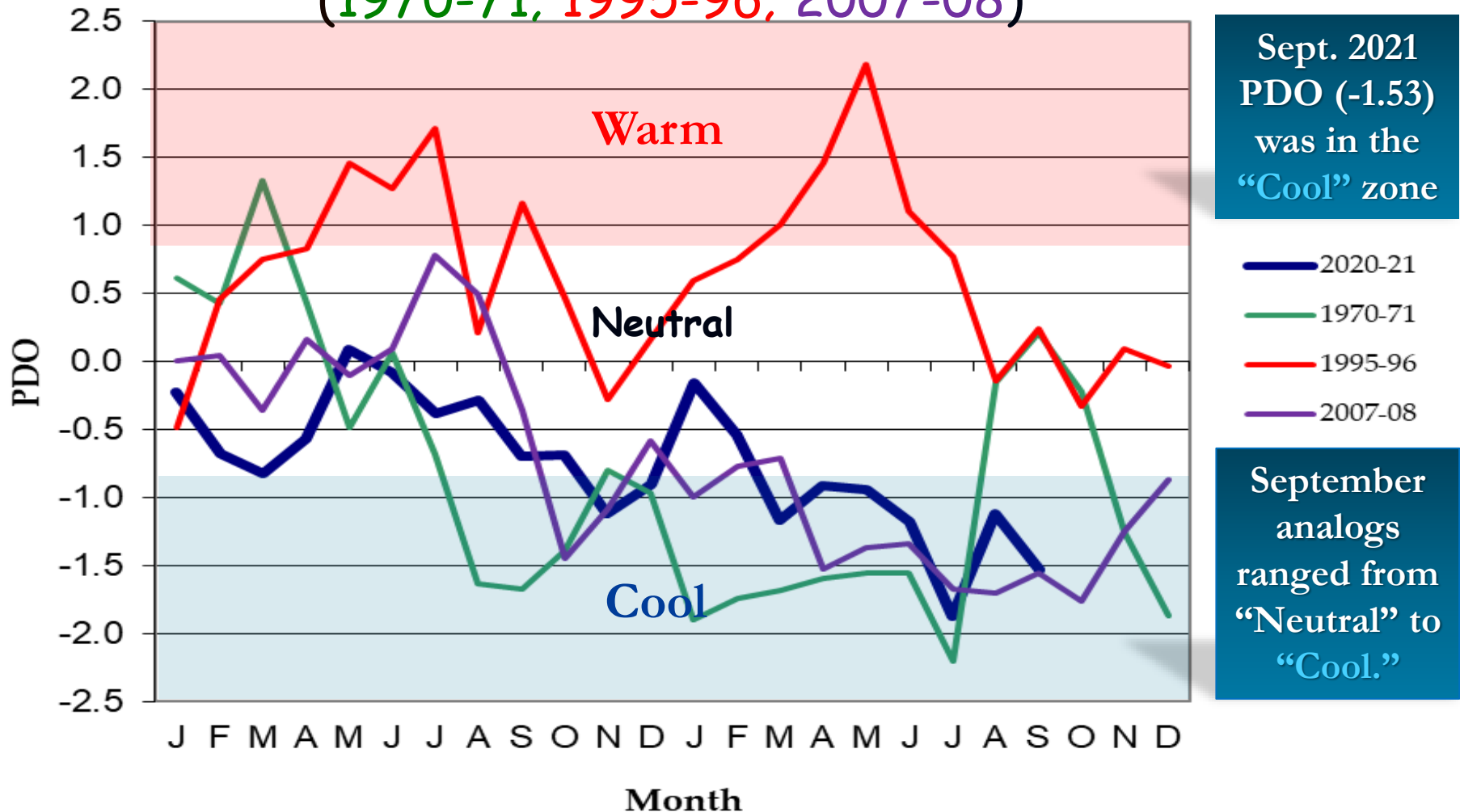


*ONI explanation via "Forecasting Methods..." at <https://oda.direct/Weather>

North Pacific Ocean

(Poleward of 20°N Latitude)

PDO* values from the top "analog years"
compared with the current period (2020-21)
(1970-71; 1995-96; 2007-08)

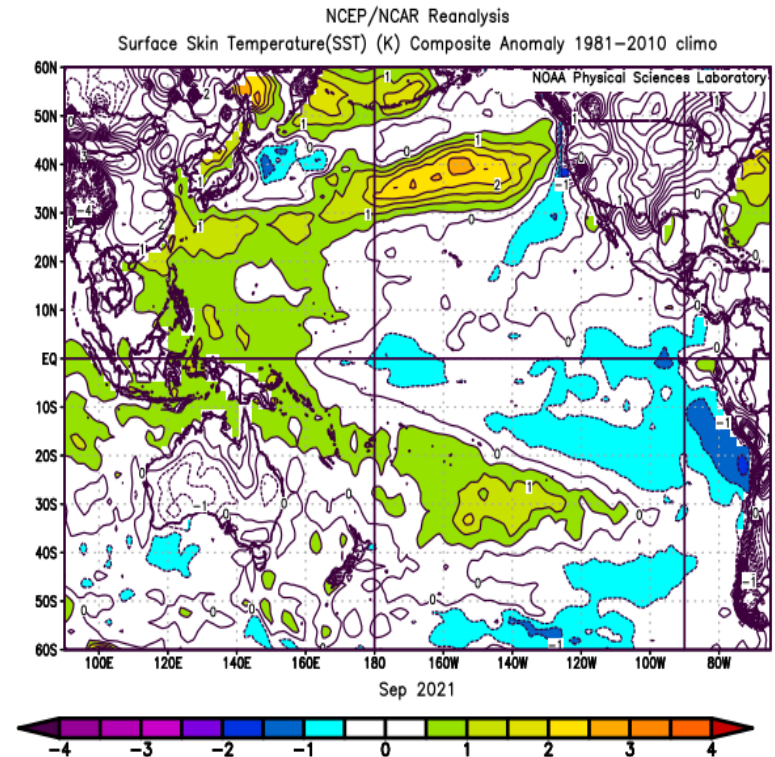
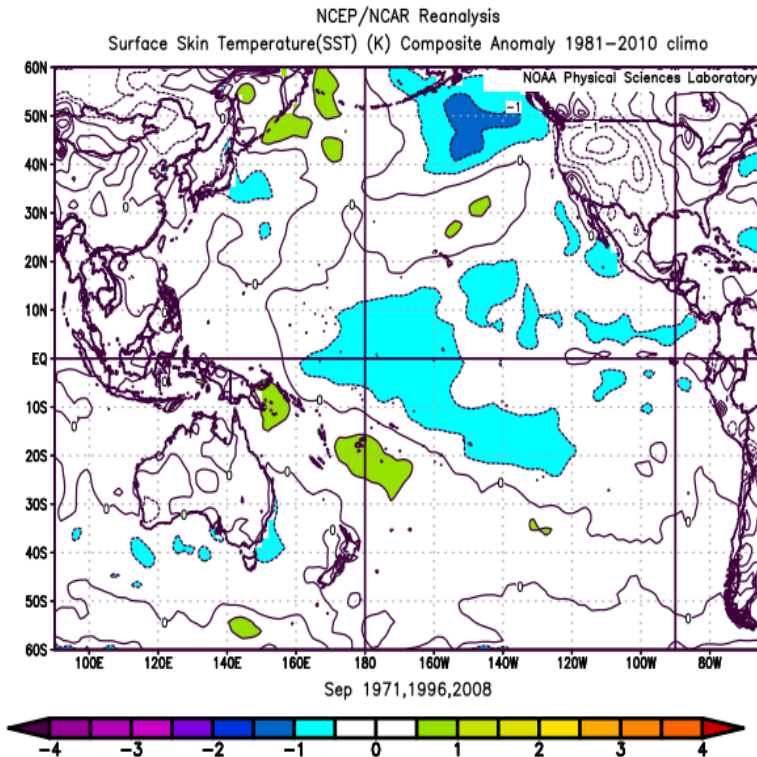


*To see PDO explanation, go to <https://oda.direct/Weather> and click on "Forecasting Methods."

SST Anomalies Comparison

Sept. Analog Composite

September 2021

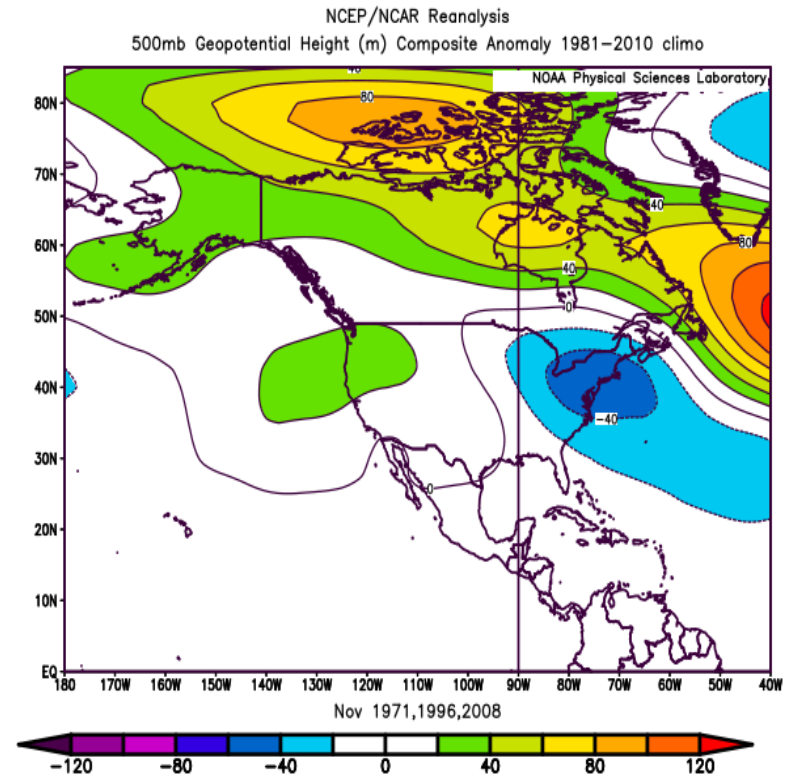
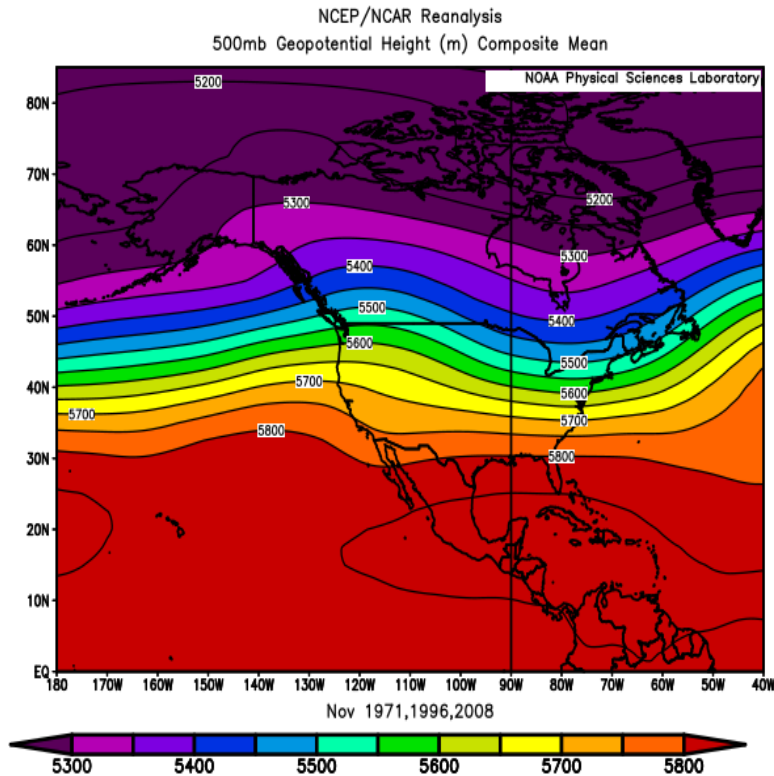


- The September analog composite (left) has a similar SST anomaly pattern to September 2021 (right) but is generally cooler.
- Those differences could reflect the overall warming of the climate during that period, which adds error to an analog-based forecast.

November 2021 Forecast

Mean Upper-Air Pattern

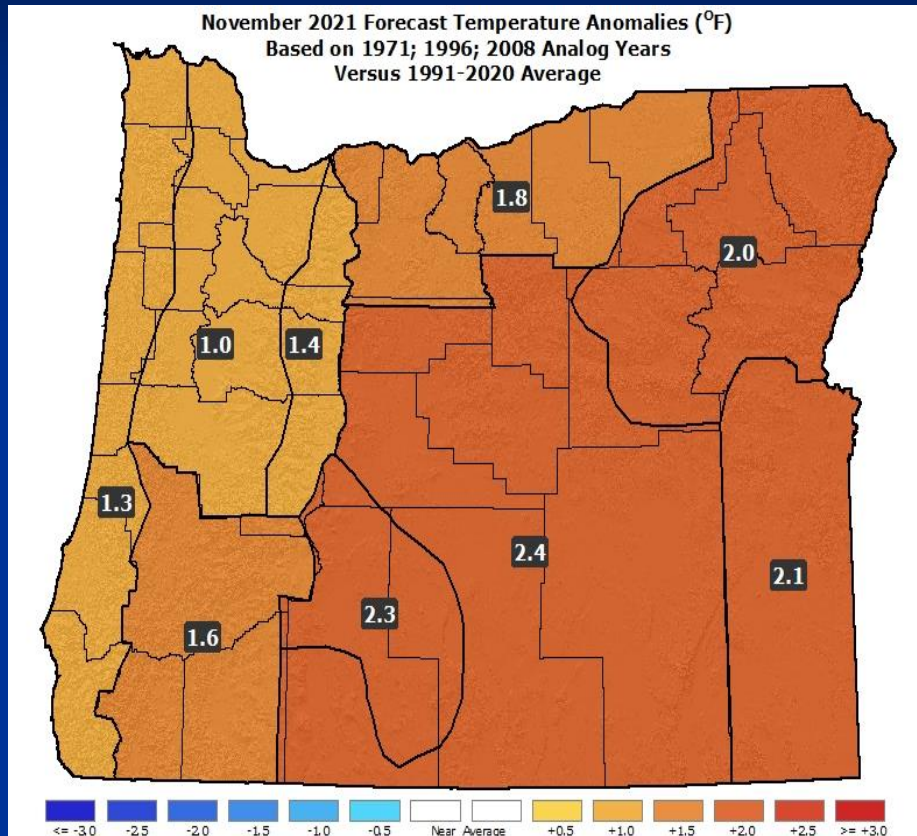
Upper-Air Anomalies



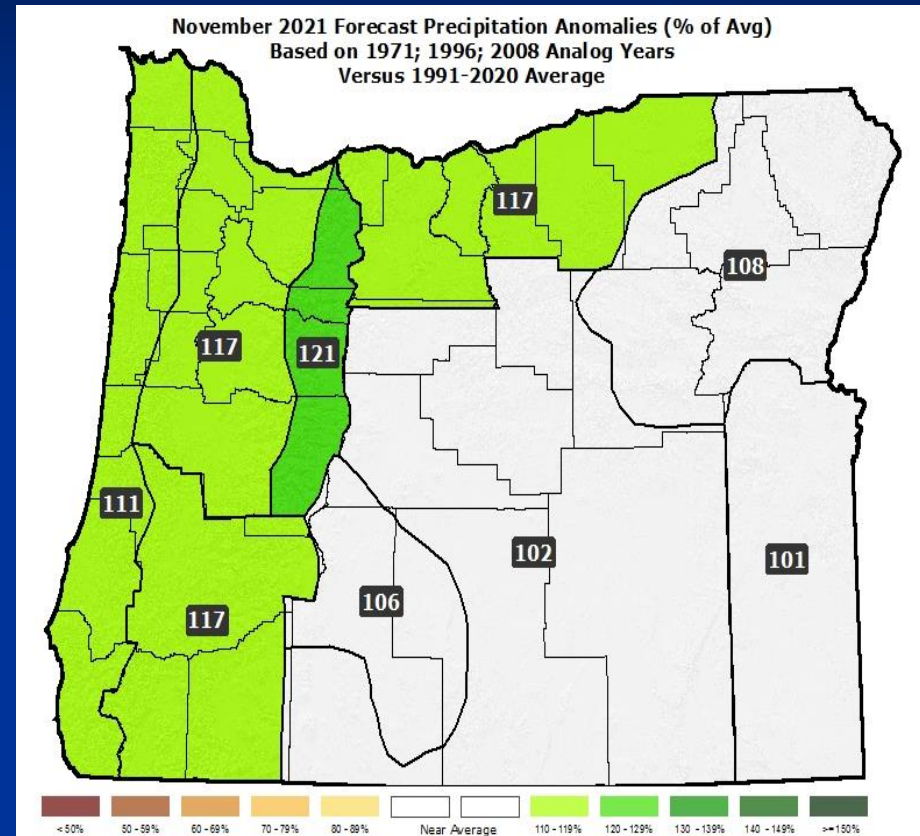
- 1971 & 1996 had near-average conditions aloft over Oregon, while 2008 maintained anomalous ridging.
- Although this pattern favors relatively mild conditions, it may also bring much-needed precipitation to the state.

November 2021 Forecast

Temperatures



Precipitation

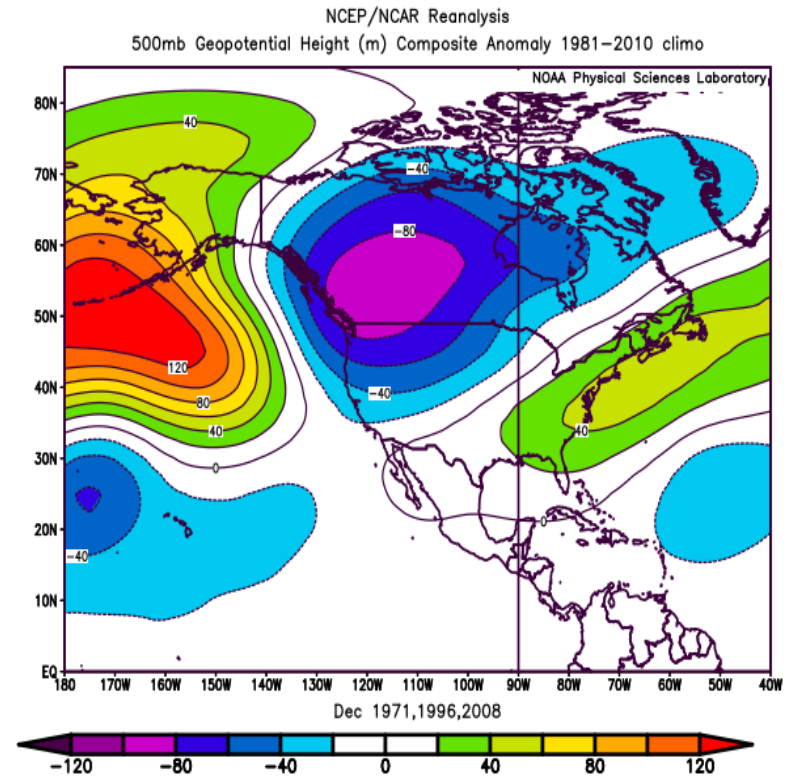
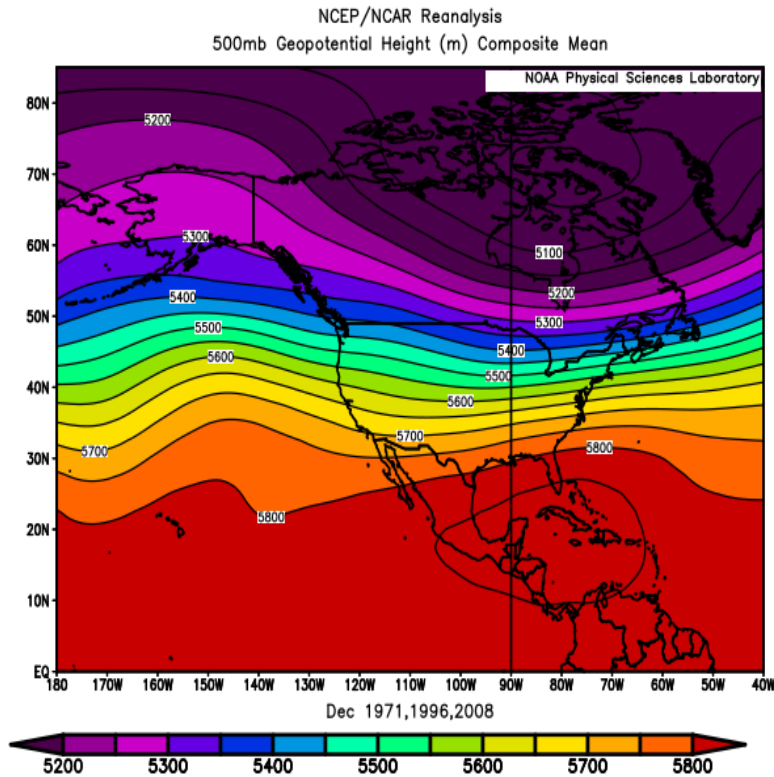


- Near or above average temperatures likely.
- 1971 & 1996 were relatively wet and 2008 was dry. A blend suggests a transition from above-average precipitation north and west to near average precipitation south and east.

December 2021 Forecast

Mean Upper-Air Pattern

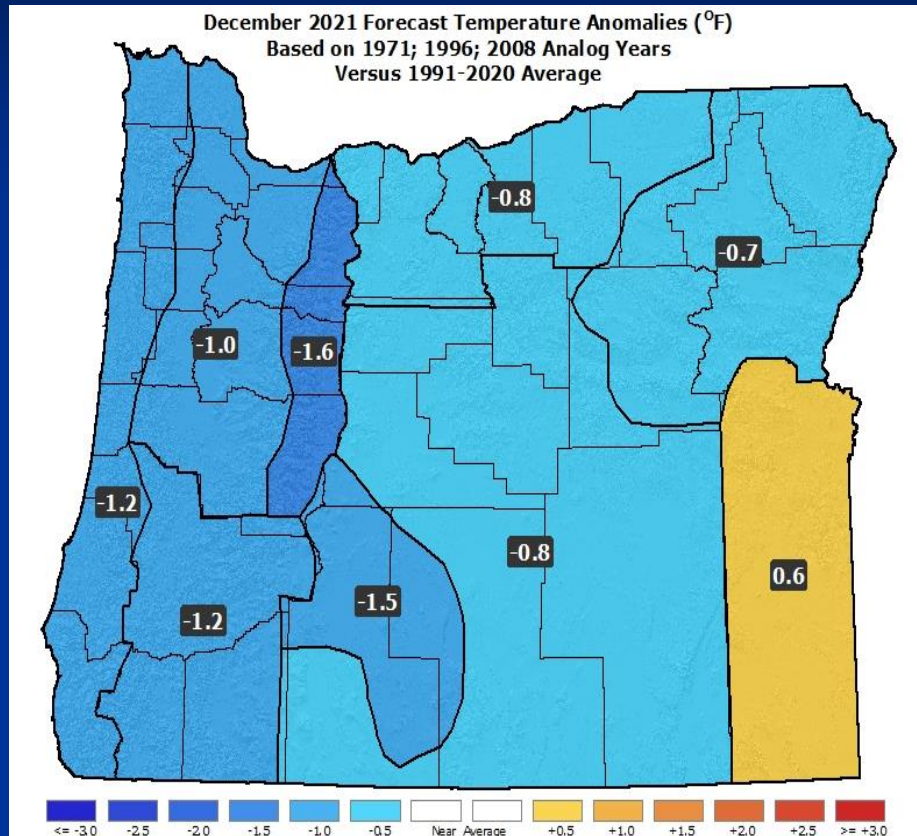
Upper-Air Anomalies



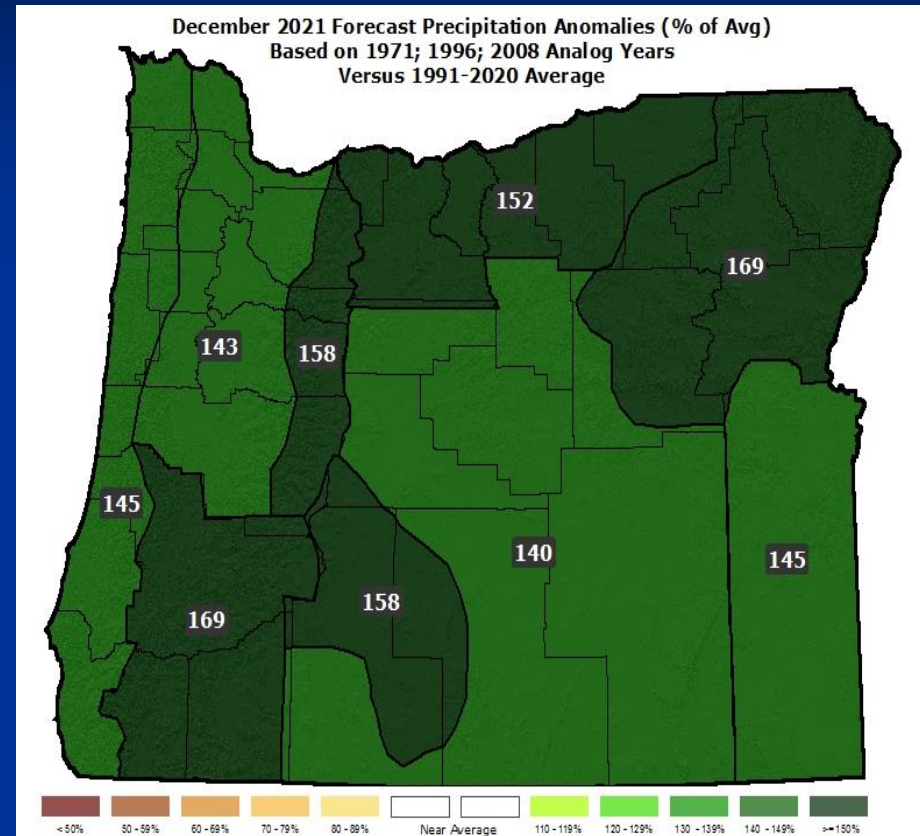
- The analog years were consistent in showing anomalous troughing over Oregon, with the strongest negative anomalies in 1971 and 1996.
- 1971 and 2008 had more ridging in the Gulf of Alaska than 1996, but confidence is high in the general anomaly pattern shown above.

December 2021 Forecast

Temperatures



Precipitation

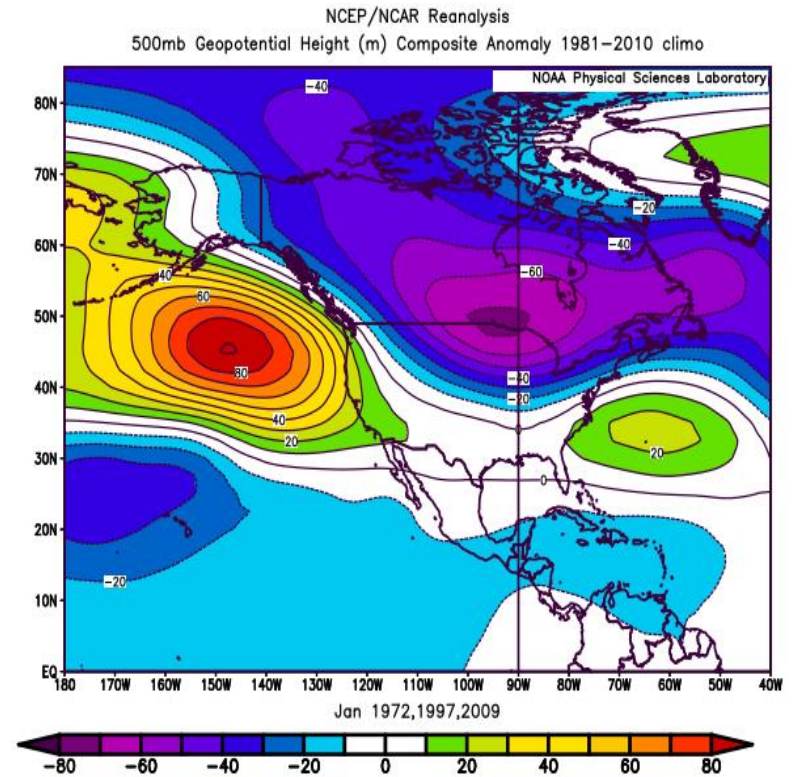
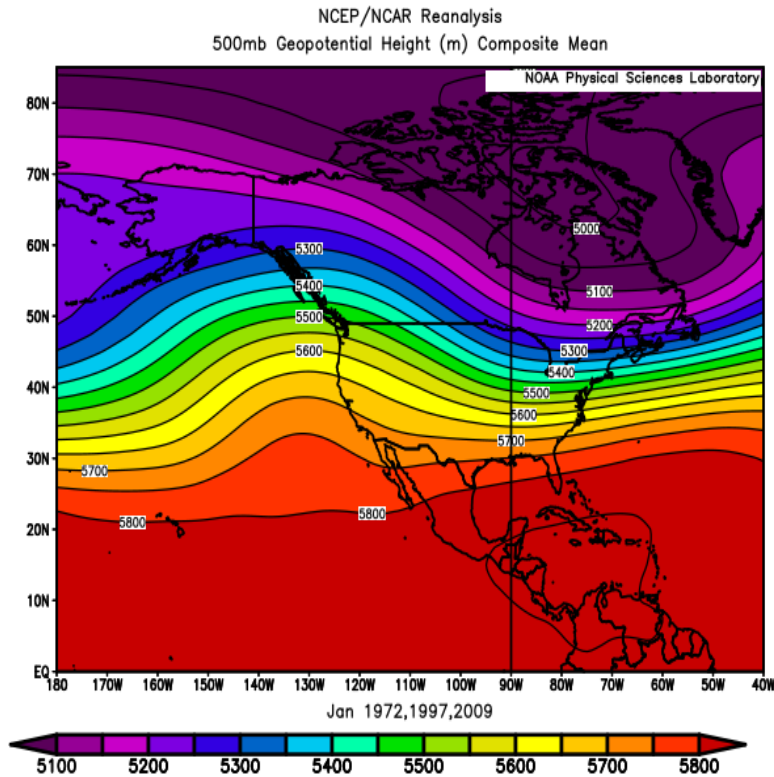


- Near-to-below-average temperatures. 1971 and 2008 had low-elevation cold-air outbreaks with significant valley snowfall.
- Precipitation and mountain snowfall near or above average.
- Heightened chances for cold outbreaks & low-elevation snowfall.

January 2022 Forecast

Mean Upper-Air Pattern

Upper-Air Anomalies

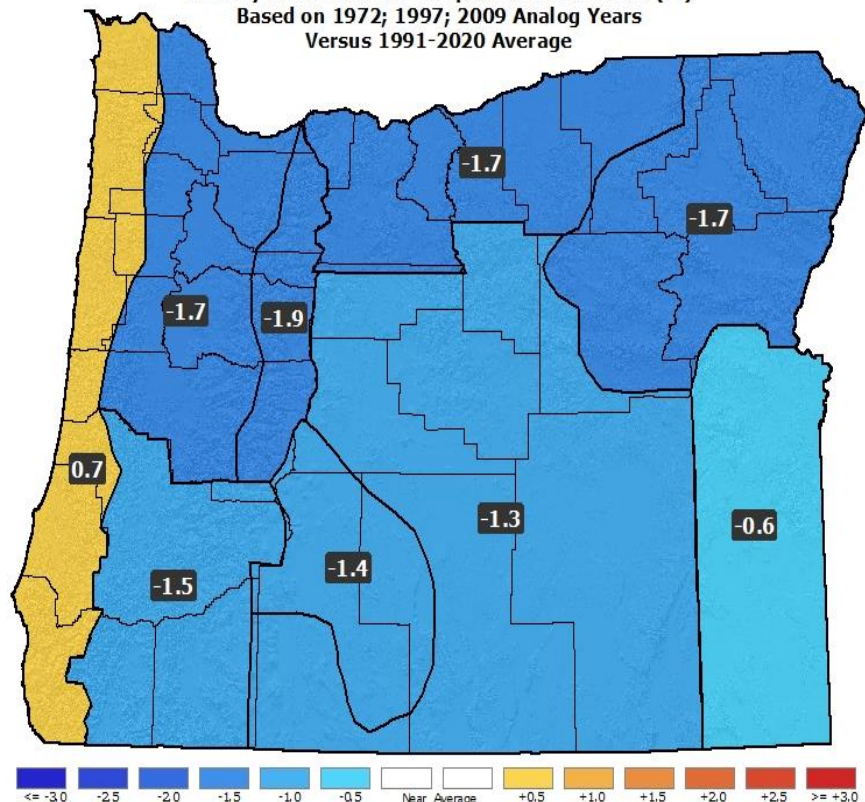


- Diverse analogs lowers confidence in a specific solution but expect high-amplitude upper-air patterns and possible extreme events.
- A blend (above) puts anomalous ridging in the eastern Gulf of Alaska and anomalous troughing over most of Canada & the northern U.S.

January 2022 Forecast

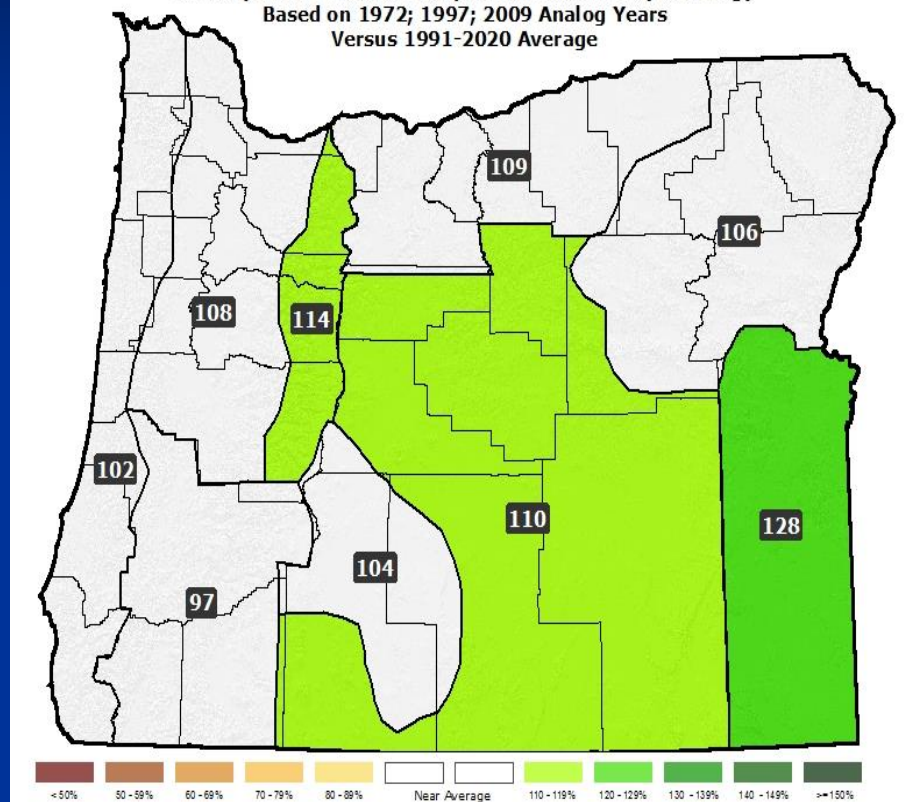
Temperatures

January 2022 Forecast Temperature Anomalies (°F)
Based on 1972; 1997; 2009 Analog Years
Versus 1991-2020 Average



Precipitation

January 2022 Forecast Precipitation Anomalies (% of Avg)
Based on 1972; 1997; 2009 Analog Years
Versus 1991-2020 Average

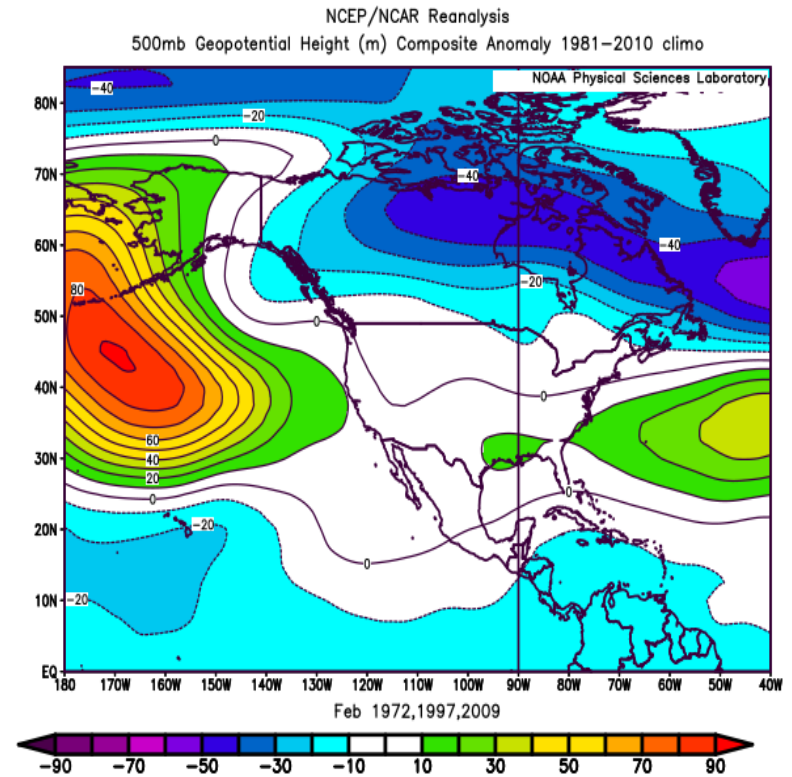
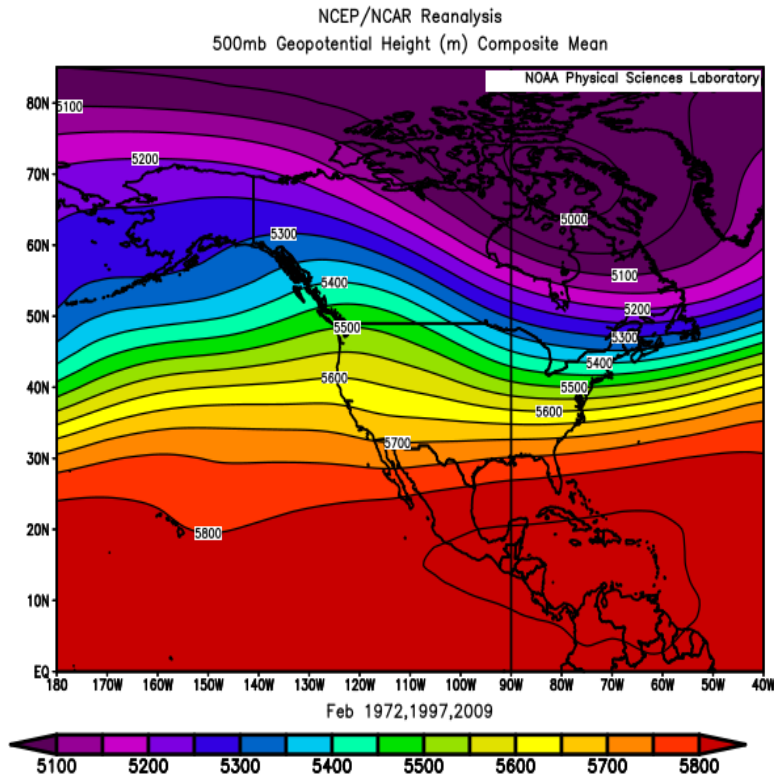


- Cooler-than-average conditions, especially north, which an increased threat of Arctic outbreaks. 1972 had an Arctic outbreak late...
- Precipitation and mountain snowfall above average north...closer to average south. Elevated chances for low-elevation snow events.

February 2022 Forecast

Mean Upper-Air Pattern

Upper-Air Anomalies

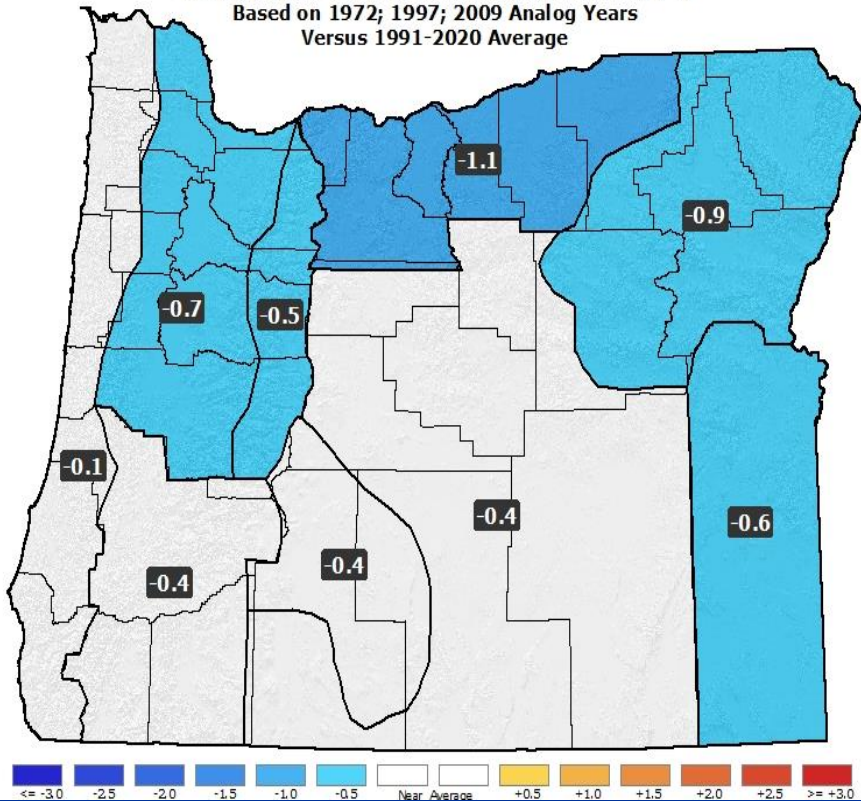


- Anomalous ridging over the eastern Pacific Ocean varies among the analogs, with the blend showing minimal departures over Oregon.
- This is a classic La Niña upper-air signature and leaves the door open for cold-air dumps into the region, especially early in the month.

February 2022 Forecast

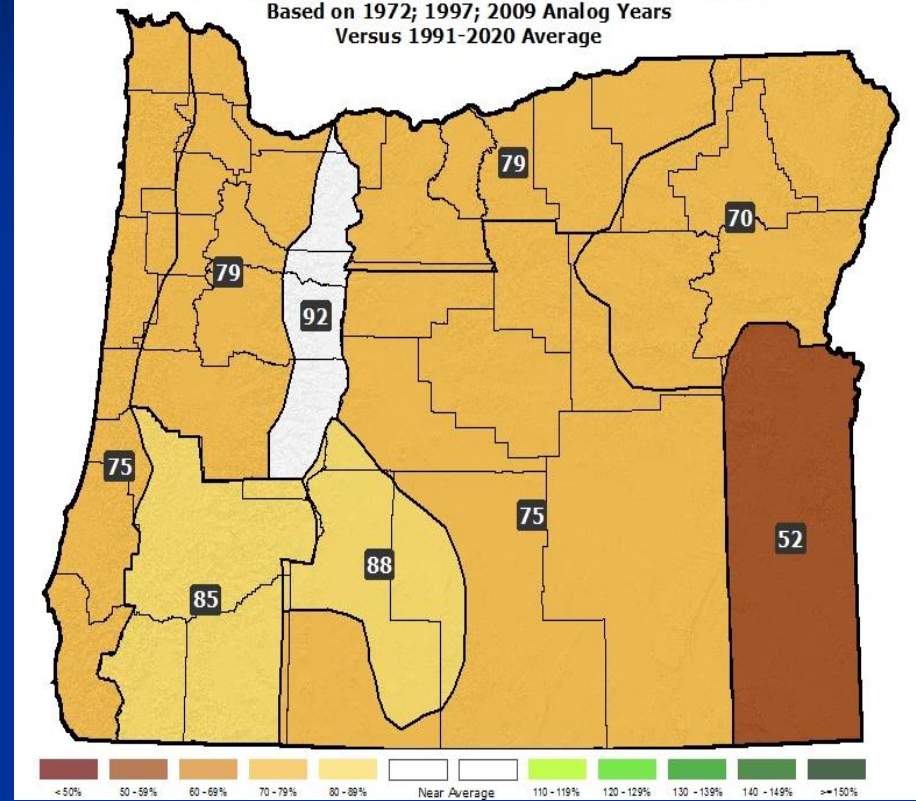
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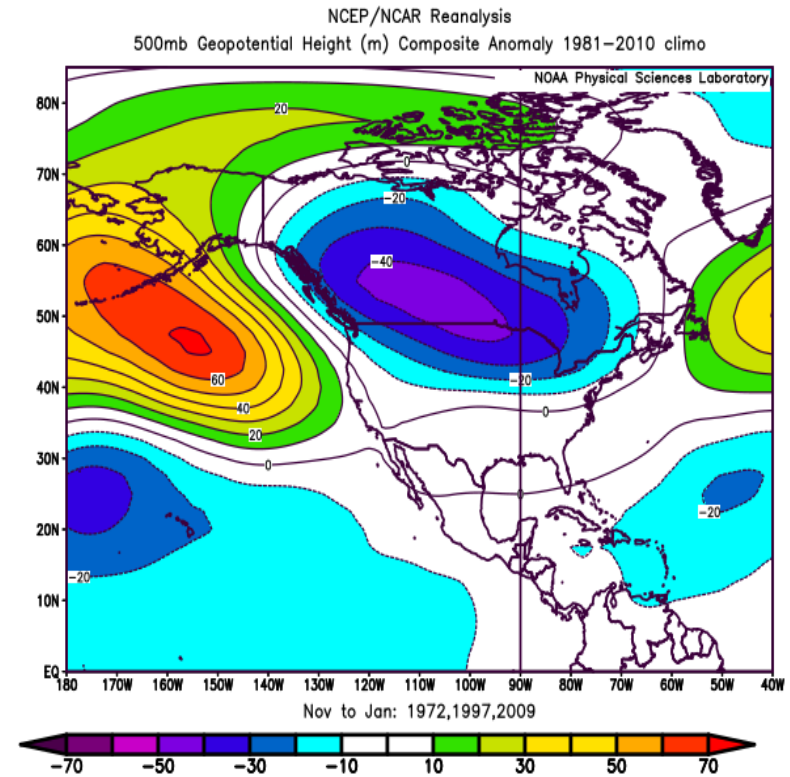
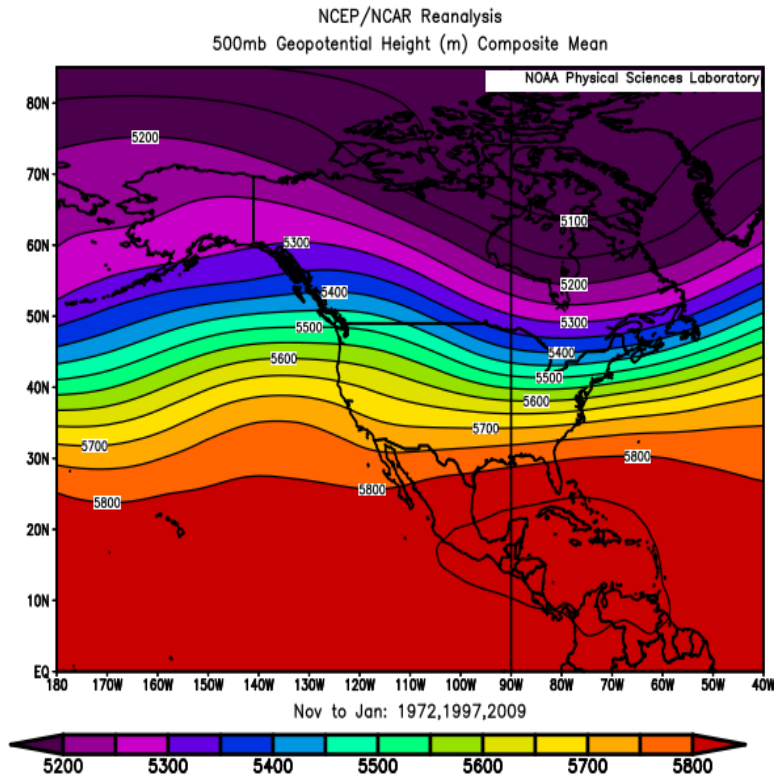


- Cooler-than-average conditions likely, especially north. Increased chances for Arctic outbreaks early in the month.
- Analogs had a wide range of precipitation patterns. 1997 and 2009 were drier than average, but 1972 was quite wet.

Nov. 2021 – Jan. 2022 Forecast

Mean Upper-Air Pattern

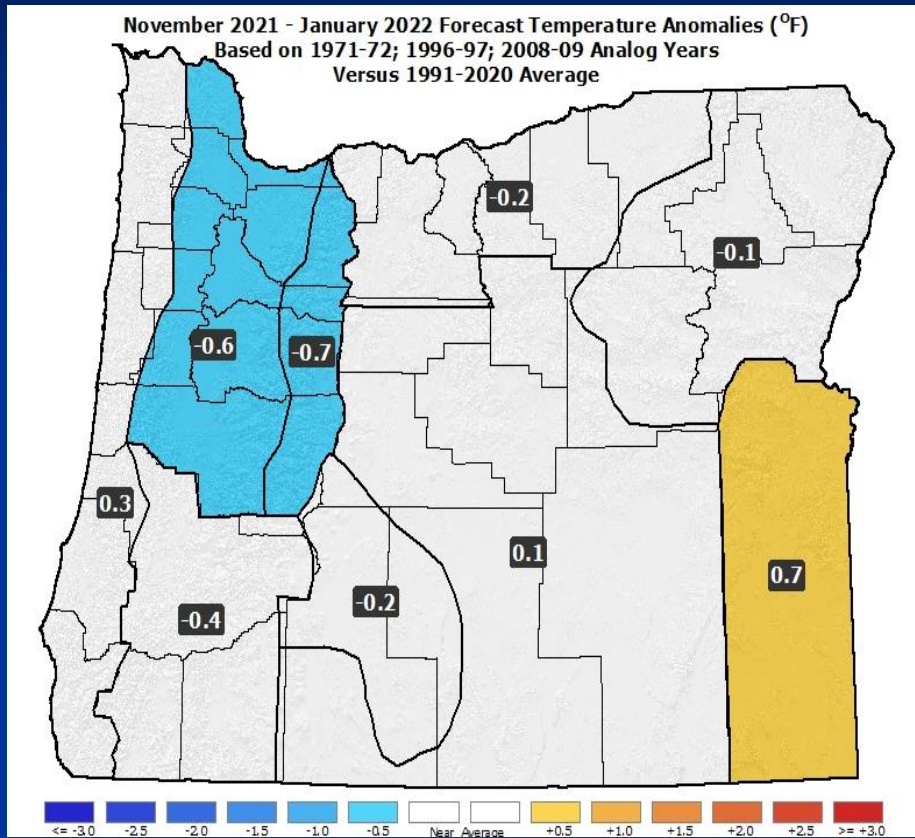
Upper-Air Anomalies



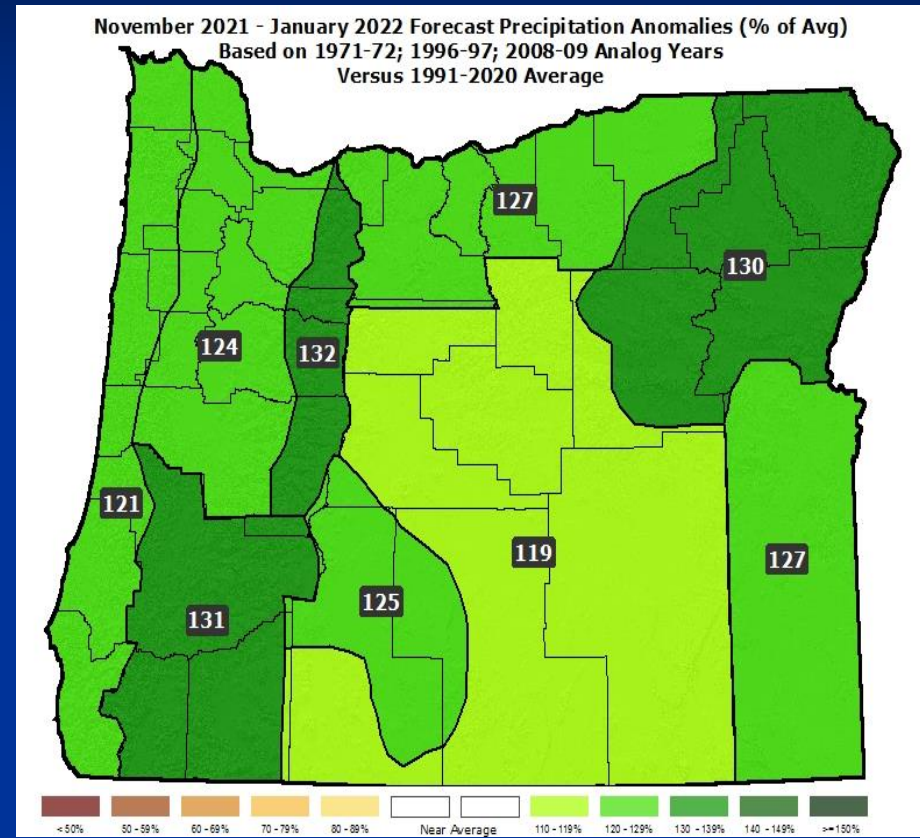
- 1971-72 & 1996-97 had anomalous troughing over Oregon, while 2008-09 put the anomalous ridging closer to the coast.
- A blend of the analogs (above) shows anomalous troughing over most of Canada with the potential for it to extend into the Pacific NW.

Nov. 2021 – Jan. 2022 Forecast

Temperatures



Precipitation

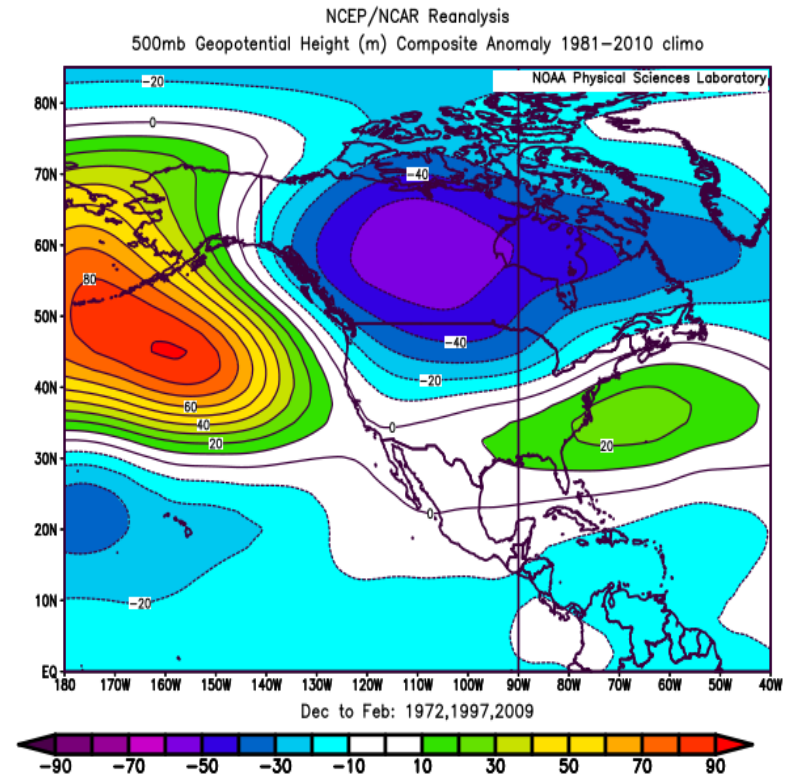
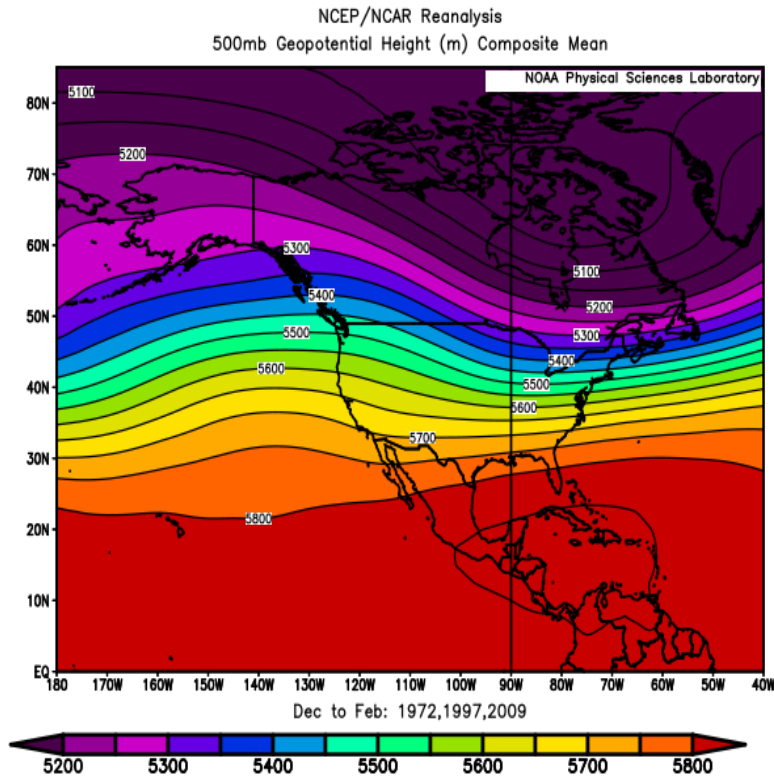


- Temperatures may fluctuate but should be below average north and near average south. Some cold outbreaks with valley snow/ice likely.
- Above-average precipitation and near-to-above-average mountain snowfall should bring some relief from our severe-to-extreme drought.

Dec. 2021 – Feb. 2022 Forecast

Mean Upper-Air Pattern

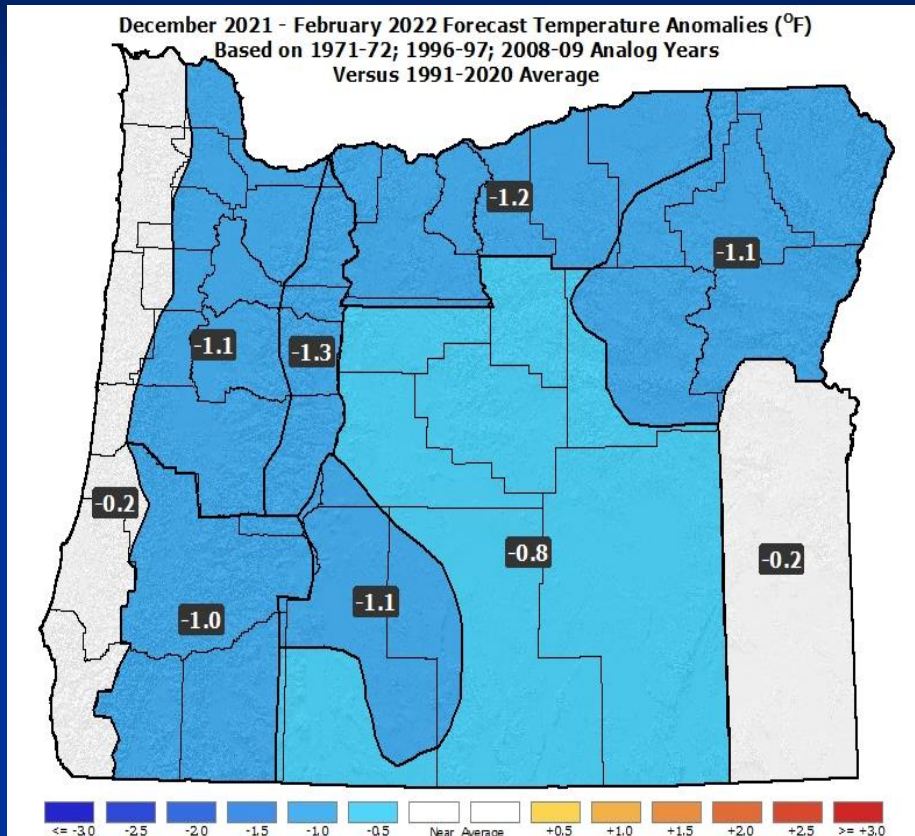
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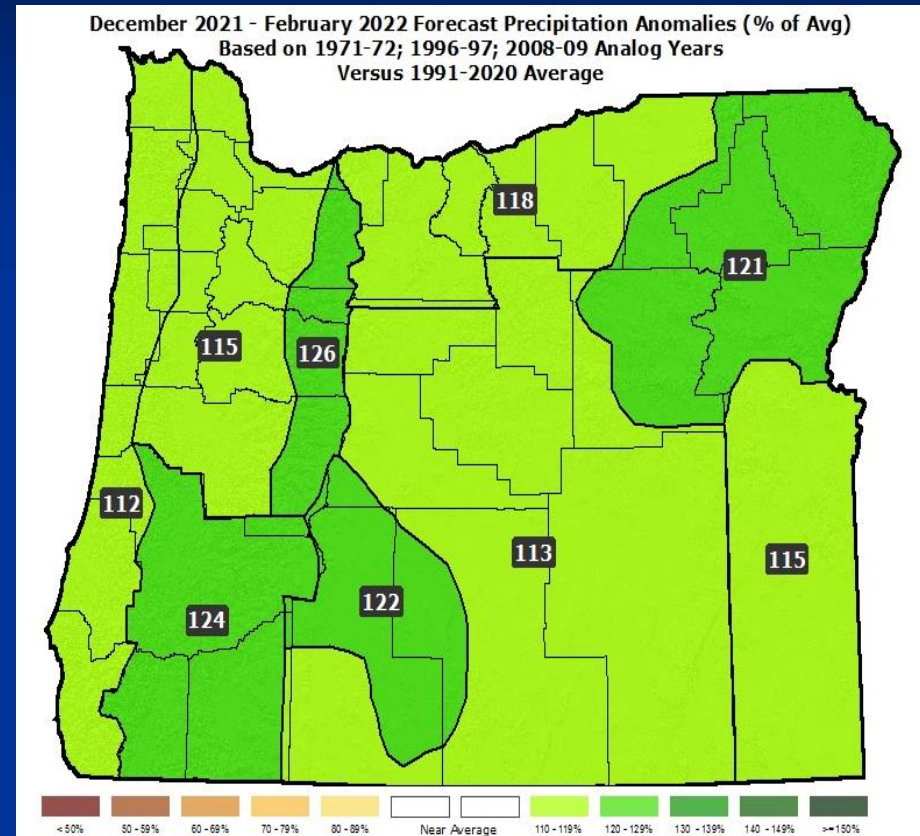
- Anomalous ridging is likely over the eastern Pacific Ocean, which should lead to anomalous troughing over the Pacific Northwest.
- This favors generally below-average snow levels, especially across northern Oregon, stormy weather at times, and cold outbreaks.

Dec. 2021 – Feb. 2022 Forecast

Temperatures



Precipitation



- Below-average temperatures and snow levels. The chances for quite stormy periods and cold-air outbreaks are heightened.
- The best chance for Arctic outbreaks is from mid-December through early February. At least one significant event is likely.

Could it be the...?

WEEKLY WORLD

NEWS

September 12, 2000

\$1.59 U.S.

\$1.99 CANADA

**U.S. WEATHER
FORECASTERS
PREDICT . . .**

COLDEST WINTER SINCE '78!

**NEWS
FLASH!**

**TWENTY-TWO YEARS AGO, AMERICANS
SUFFERED THROUGH ONE OF THE WORST WINTERS
IN HISTORY . . . PREPARE FOR ANOTHER
RECORD BREAKER, WARN
EXPERTS!**

**Your National Weather Forecast for November,
December, January, February & March**



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**I'm Saying
There's A Chance!**

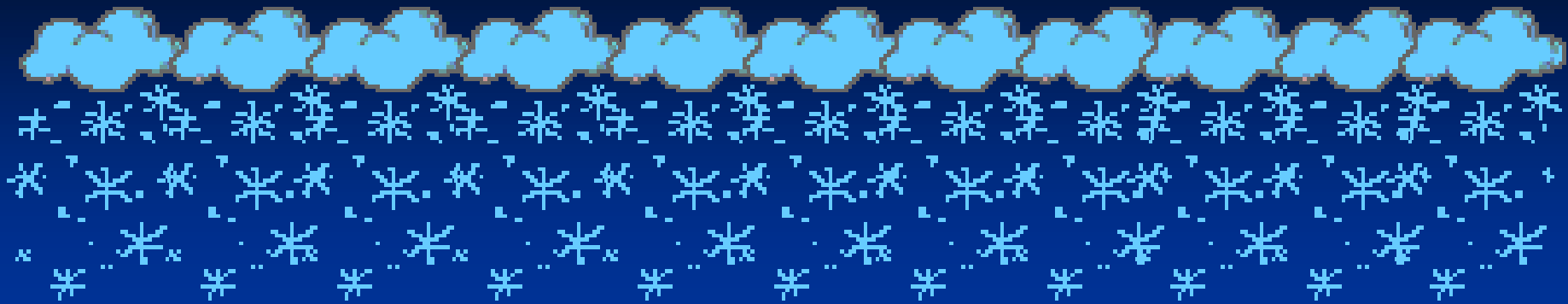
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Winter 2021-22 Highlights



- “Coldest Winter Since ‘78!”...I’m saying there’s a chance...
- Like last year, this winter should have stormy periods with some “extreme” weather events! Hopefully not the ice!
- Best chance for relatively-mild temperatures will be from November through early December, but it could be stormy!
- Unlike last year, the chances for cold outbreaks during the second half of December are elevated “White Christmas?”.
- Near or above-average mountain snowfall, especially north.
- At least one cold-air outbreak likely, with elevated chances for significant snowfall in the Willamette Valley.

Oregon Department of Agriculture

<http://www.oregon.gov/ODA/programs/NaturalResources/Pages/Weather.aspx>

Seasonal Climate Forecast

The Seasonal Climate Forecast offers a three-month look at Oregon weather and is provided courtesy of Oregon Department of Forestry lead meteorologist Pete Parsons.

Seasonal Climate Forecast (PDF) , issued October 21, 2021

Seasonal Climate Forecast (PowerPoint) , issued October 21, 2021

See a video by Pete Parsons discussing his Seasonal Climate Forecast.

Verification of Climate Forecast (PDF) , issued October 20, 2021

Verification of Climate Forecast (PowerPoint) , issued October 20, 2021

See a video by Pete Parsons discussing his forecast verification.

Forecasting Methods (PDF) , revised December 18, 2019

Forecasting Methods (PowerPoint) , revised December 18, 2019

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Forecast Updated Monthly

(Around the 20th)

"Thank you"
Oregon Chapter of the AMS!

Pete Parsons, ODF Meteorologist
at 503-945-7448 or peter.gj.parsons@oregon.gov

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