



Seasonal Climate Forecast Verification

January – March 2024

Issued: April 11, 2024

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Photo: Bill Waterman

Format and Purpose:

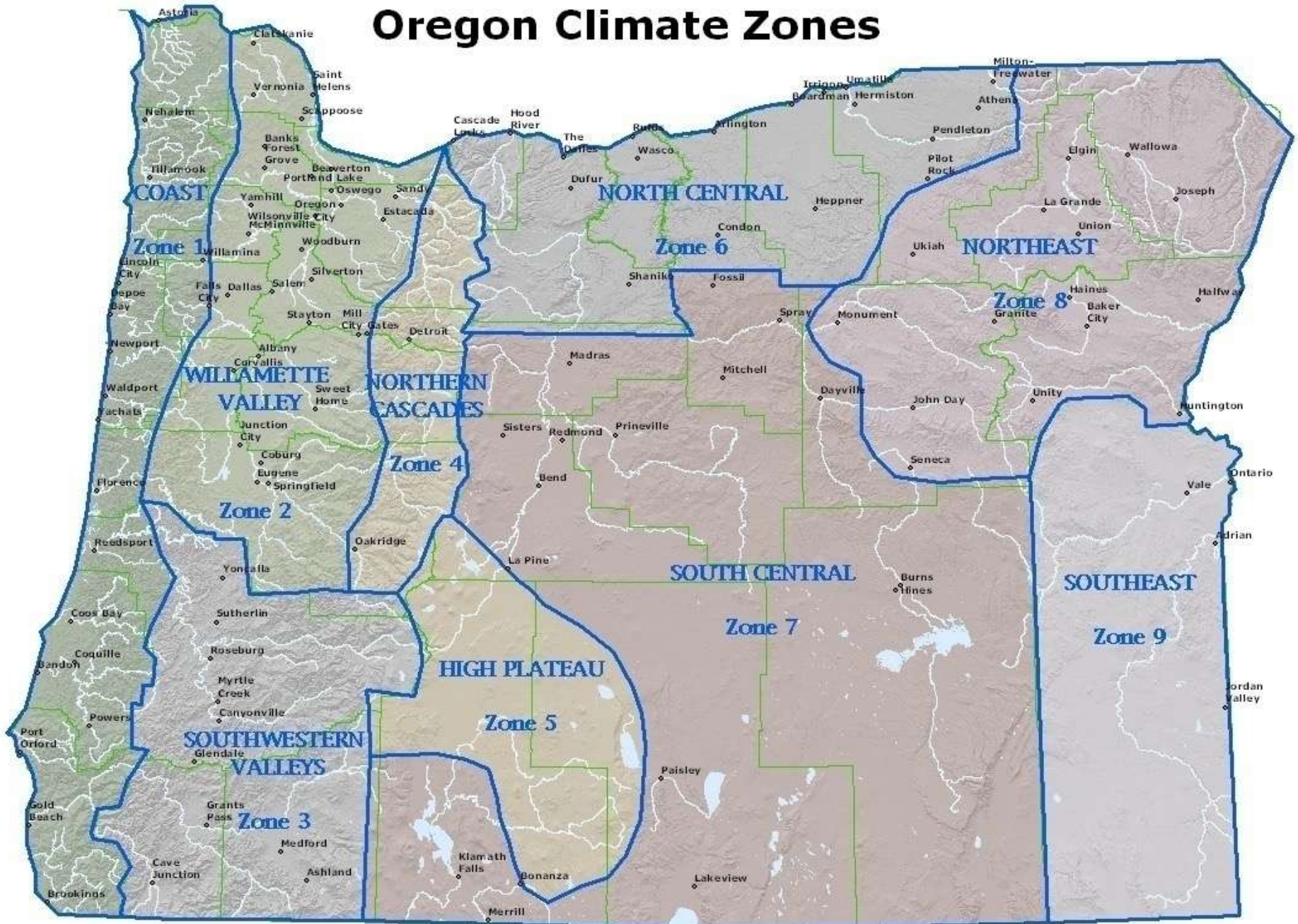
- A side-by-side comparison of the “**Seasonal Climate Forecast**” vs. what (**Actually Occurred**) is done for both the 1-month & 3-month forecasts.*
- The accuracy of each forecast is reviewed, and the need for analog-year updates is examined.
- This is part of an ongoing assessment of the utility of this forecast method.**

**Utilizes 1991-2020 long-term averages*

**See “Forecasting Methods...” at:

<https://oda.direct/Weather>

Oregon Climate Zones



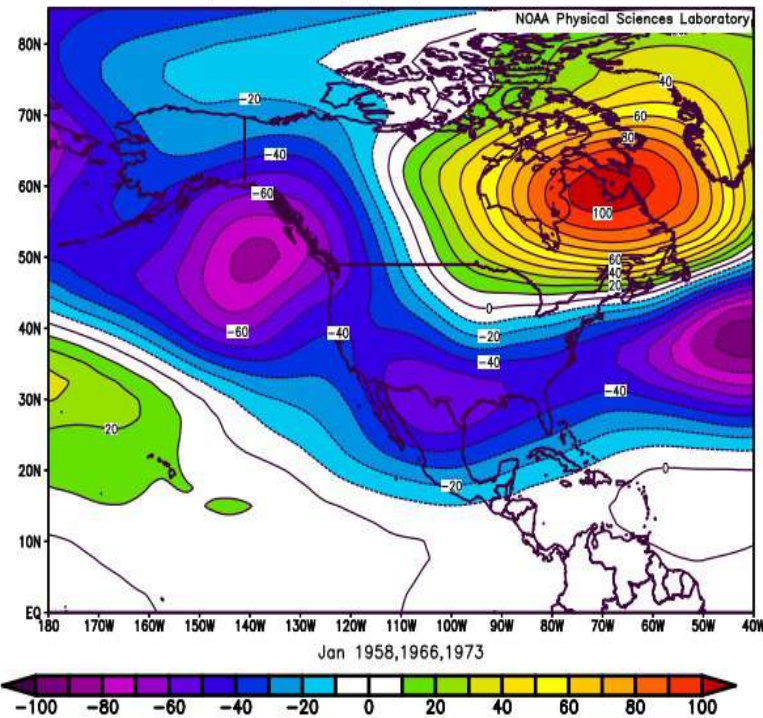
January 2024

(Forecast Issued December 21, 2023)/(Actual)

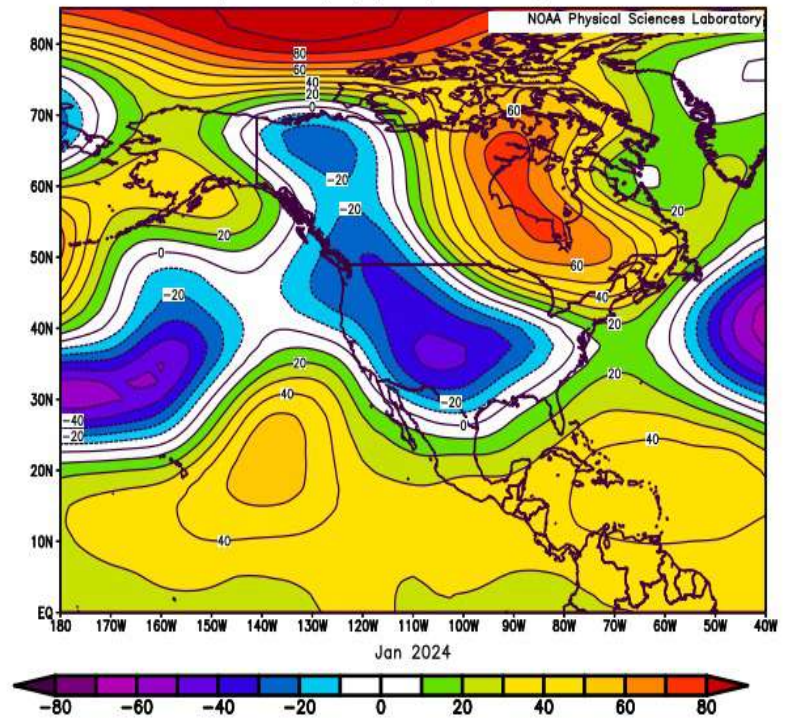
Forecast Upper-Air Anomalies

Actual Upper-Air Anomalies

NCEP/NCAR Reanalysis
500mb Geopotential Height (m) Composite Anomaly 1991–2020 climo



NCEP/NCAR Reanalysis
500mb Geopotential Height (m) Composite Anomaly 1991–2020 climo



- Anomalous troughing was both expected (left) and observed (right) across the Pacific NW. This pattern opened the door for the region to get a glancing blow from a very cold arctic air mass at mid-month. Mostly a “forecast hit.”

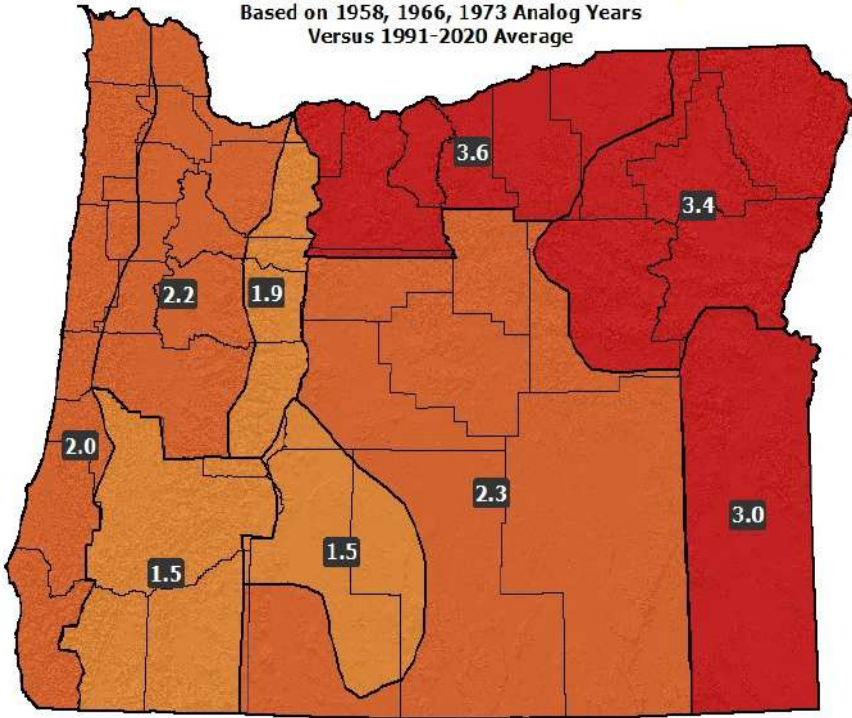
January 2024

(Forecast Issued December 21, 2023)/(Actual)

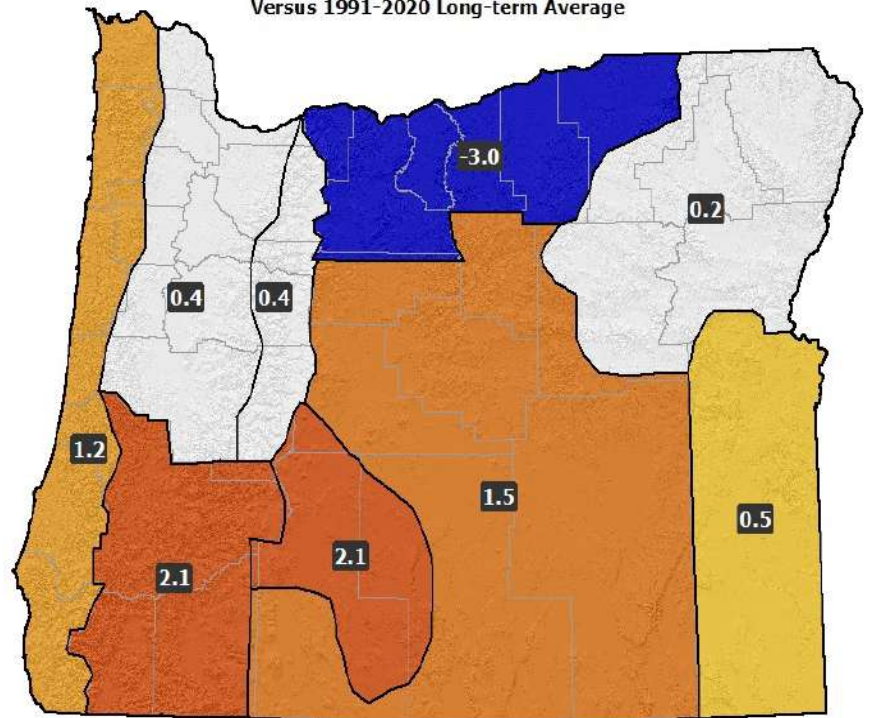
Forecast Temperatures

Actual Temperatures

January 2024 Forecast Temperature Anomalies (°F)
Based on 1958, 1966, 1973 Analog Years
Versus 1991-2020 Average



January 2024 Actual Temperature Anomalies (°F)
Versus 1991-2020 Long-term Average

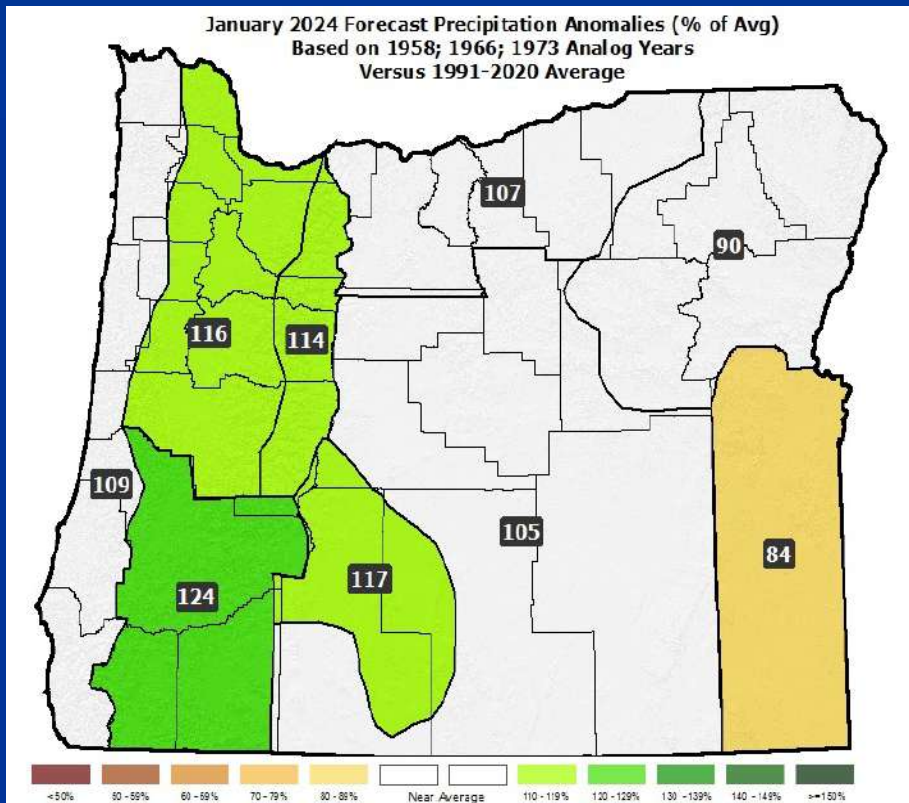


Data courtesy of the National Centers for Environmental Information (NCEI)

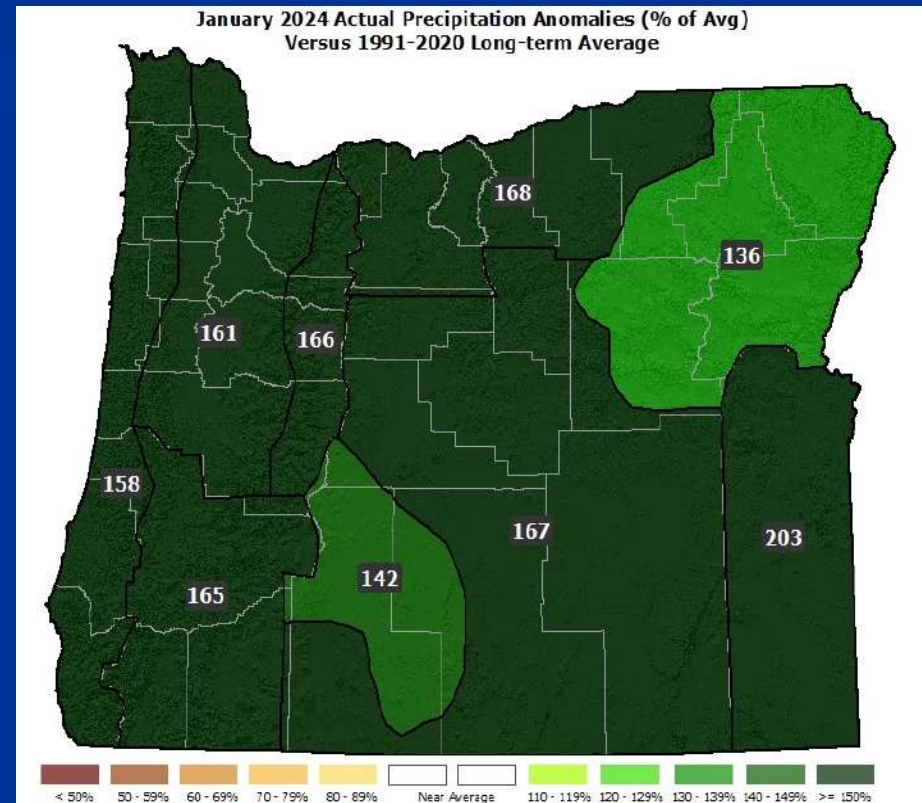
January 2024

(Forecast Issued December 21, 2023)/(Actual)

Forecast Precipitation



Actual Precipitation



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

January 2024

(Forecast Issued December 21, 2023)/(Actual)

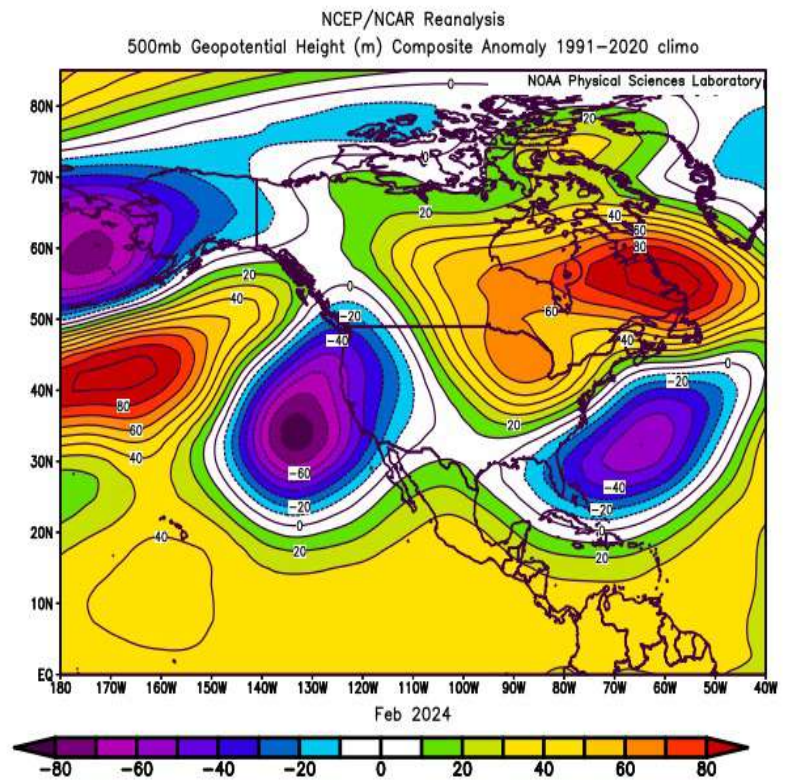
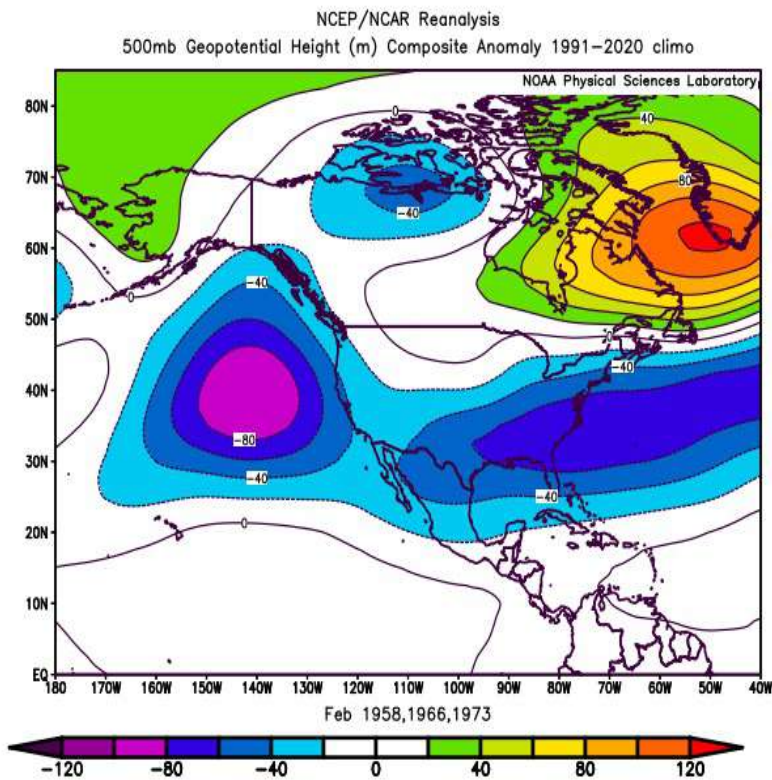
- Analogs ranged from slightly cool (1973) to very mild (1958). In the absence of arctic intrusions, above-average temperatures are likely. (Temperatures were above-average, except for a one-week arctic intrusion across the northern zones at mid-month. That skewed the monthly departures to below average for the northern zones.) A “*partial forecast hit.*”
- Analogs varied on both sides of average precipitation, with the southern zones standing the best chances for above-average rain and mountain snow. (Rain and mountain snow were above average, which mostly made up for seasonal deficits to start the month.) A “*partial forecast hit.*”

February 2024

(Forecast Issued January 18, 2024)/(Actual)

Forecast Upper-Air Anomalies

Actual Upper-Air Anomalies



■ Analogs (left) showed anomalous troughing over the eastern Pacific Ocean (El Niño signature). The February 2024 pattern (right) had strong negative anomalies centered just off the California Coast. *Mostly a “forecast hit.”*

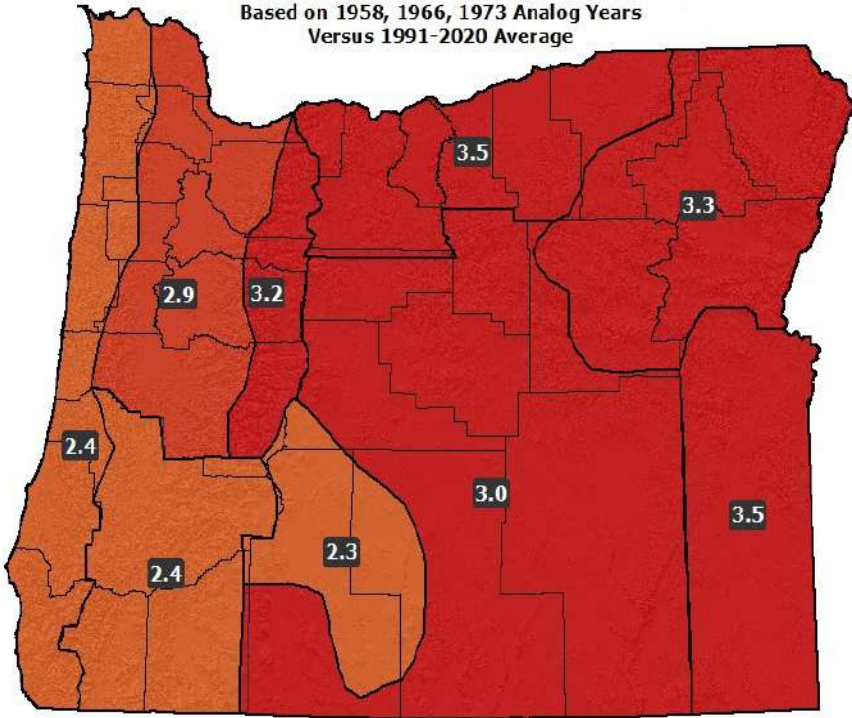
February 2024

(Forecast Issued January 18, 2024) / (Actual)

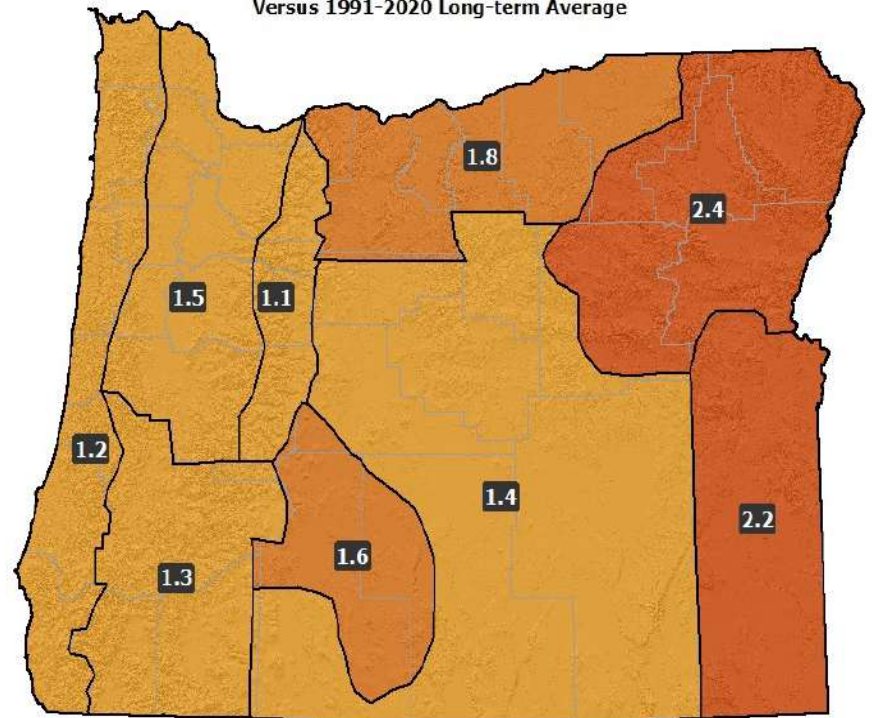
Forecast Temperatures

Actual Temperatures

February 2024 Forecast Temperature Anomalies (°F)
Based on 1958, 1966, 1973 Analog Years
Versus 1991-2020 Average



February 2024 Actual Temperature Anomalies (°F)
Versus 1991-2020 Long-term Average



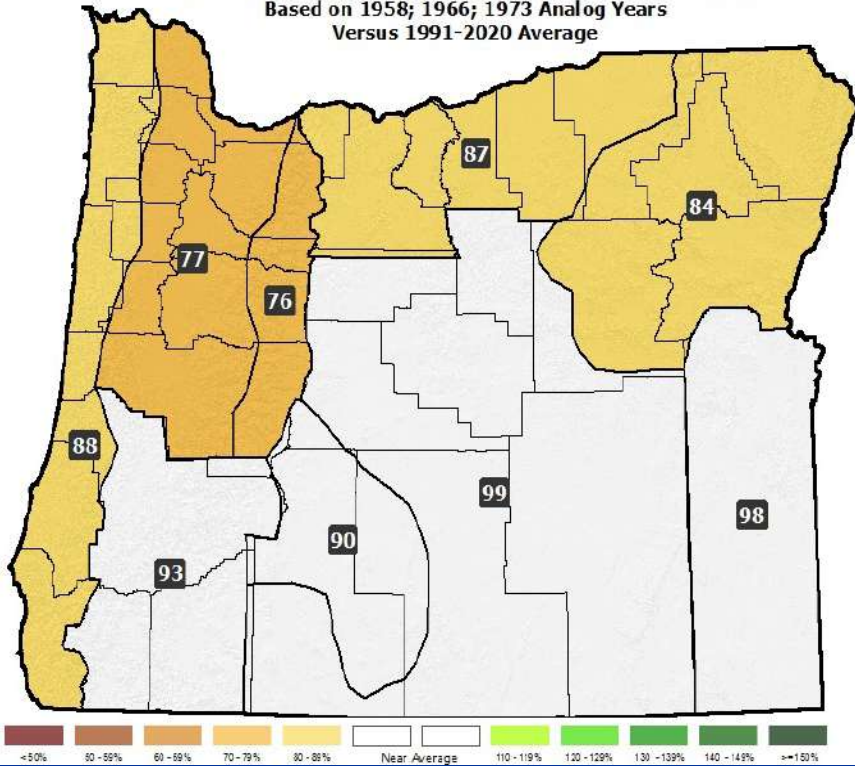
Data courtesy of the National Centers for Environmental Information (NCEI)

February 2024

(Forecast Issued January 18, 2024)/(Actual)

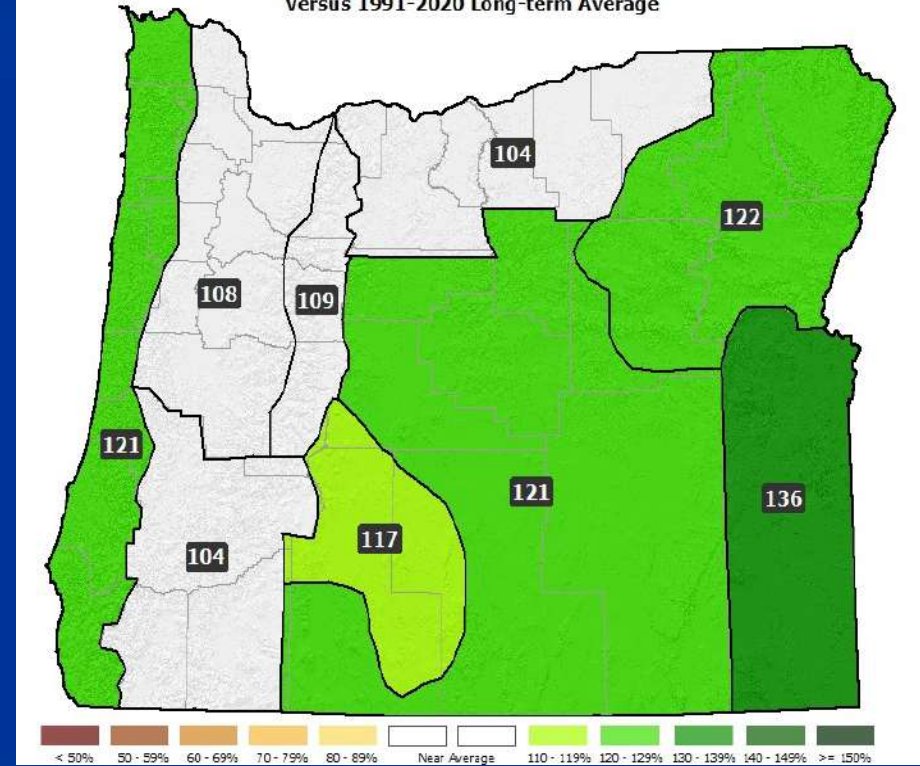
Forecast Precipitation

February 2024 Forecast Precipitation Anomalies (% of Avg)
Based on 1958; 1966; 1973 Analog Years
Versus 1991-2020 Average



Actual Precipitation

February 2024 Actual Precipitation Anomalies (% of Avg)
Versus 1991-2020 Long-term Average



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

February 2024

(Forecast Issued January 18, 2024) / (Actual)

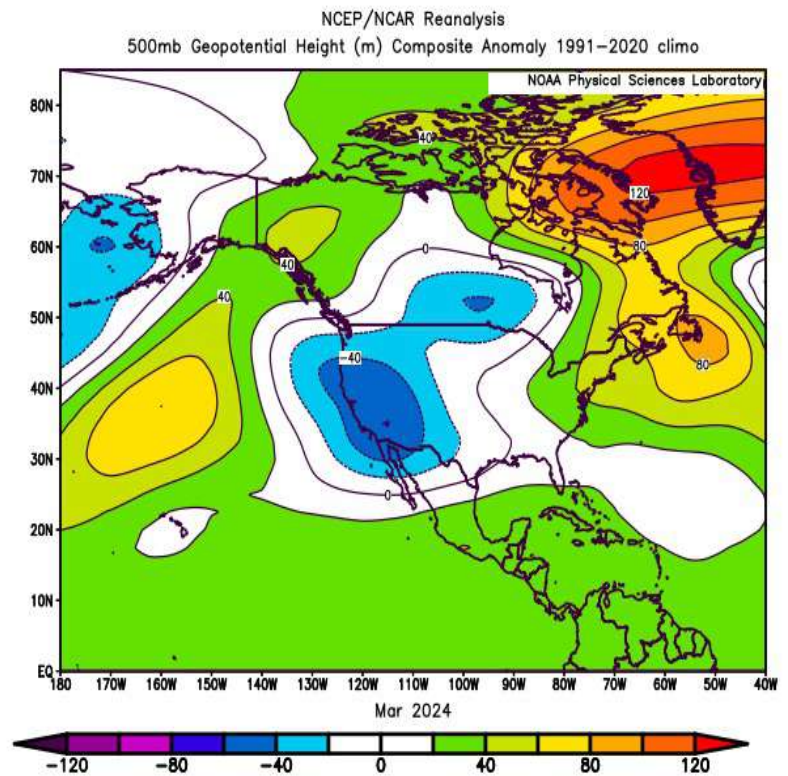
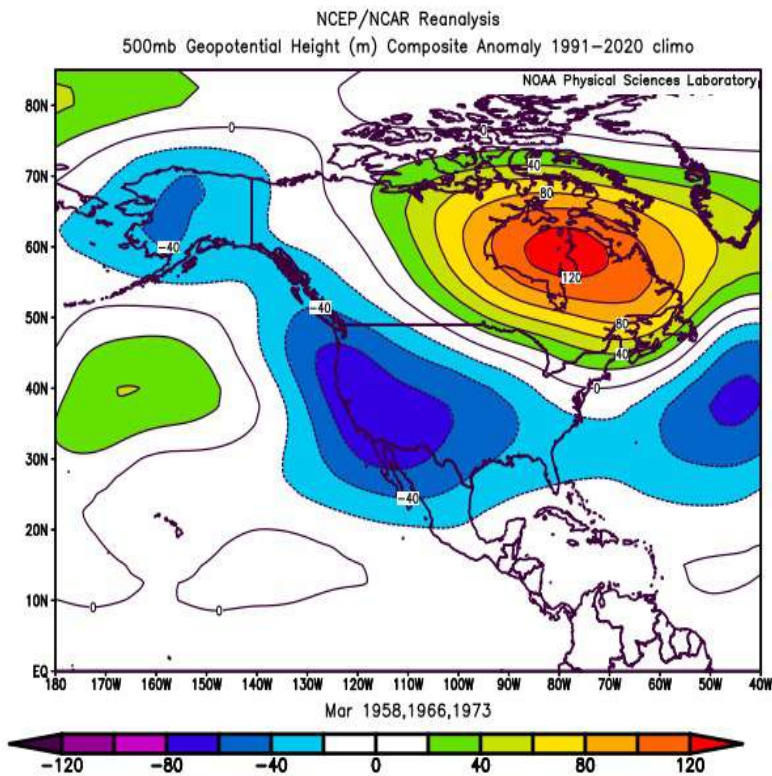
- Above-average temperatures but with short-duration cool periods. (A split-flow jet stream pattern brought generally benign weather with above-average temperatures statewide. There were only two relatively cool periods, each lasting just a couple of days.) A “forecast hit.”
- Precipitation near average south and slightly below average north. (Storms generally weakened, as they came ashore. While there were many days with some precipitation, amounts were mostly light until the very end of the month. Overall, rain and mountain snow were near or slightly above average.) A “partial forecast hit.”

March 2024

(Forecast Issued February 15, 2024)/(Actual)

Forecast Upper-Air Anomalies

Actual Upper-Air Anomalies



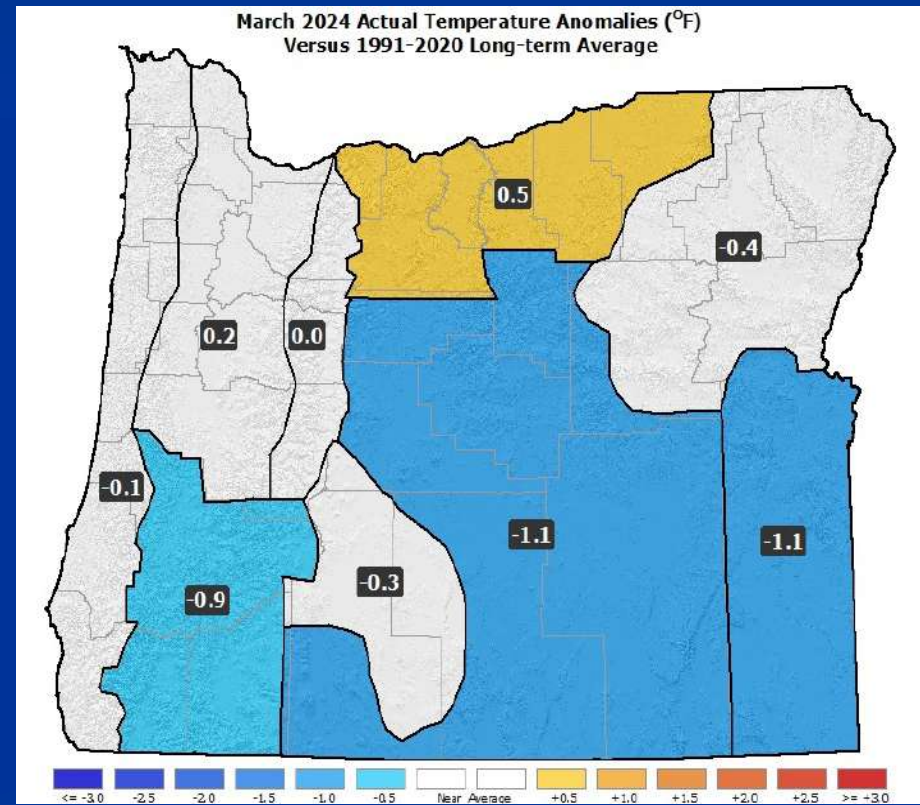
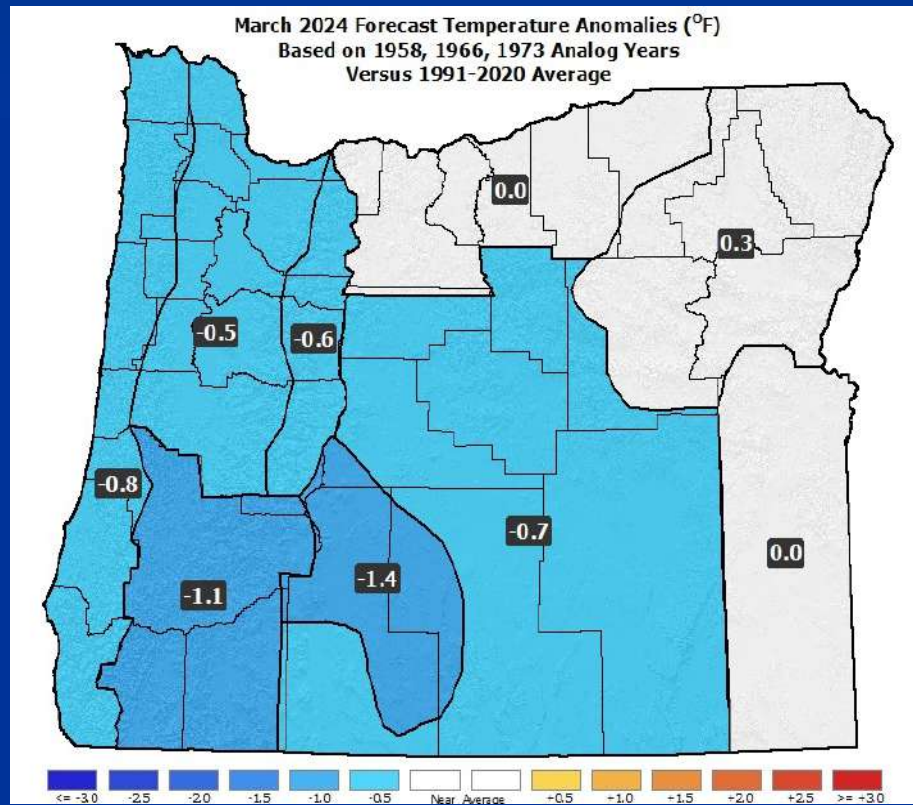
- Analog forecast (left) and observed pattern (right) both had negative anomalies along the west coast...centered over California (**El Niño** signature). A “forecast hit.”

March 2024

(Forecast Issued February 15, 2024)/(Actual)

Forecast Temperatures

Actual Temperatures



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

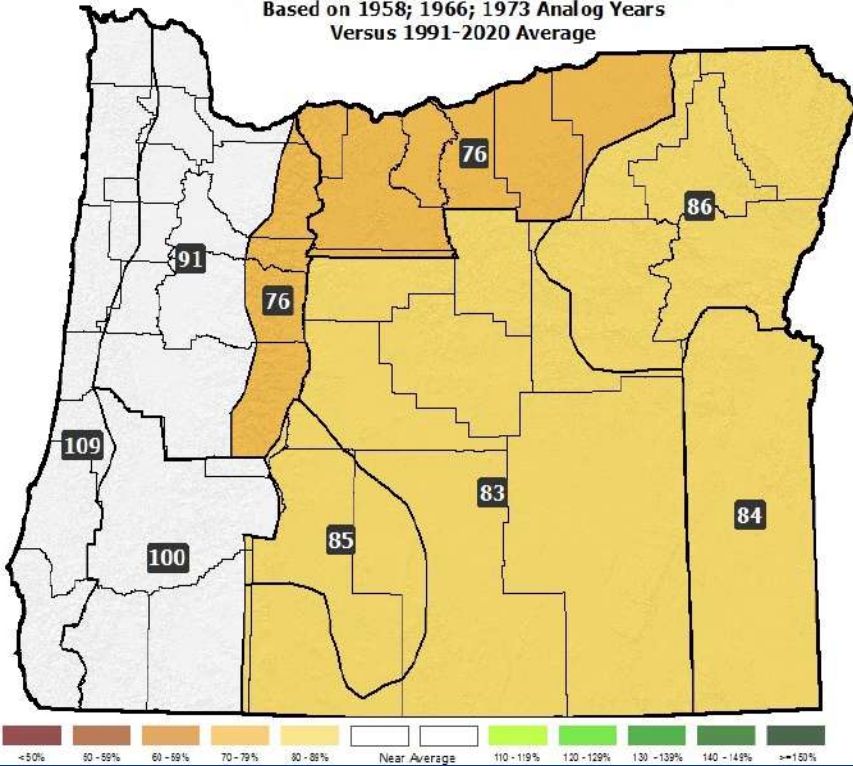
March 2024

(Forecast Issued February 15, 2024)/(Actual)

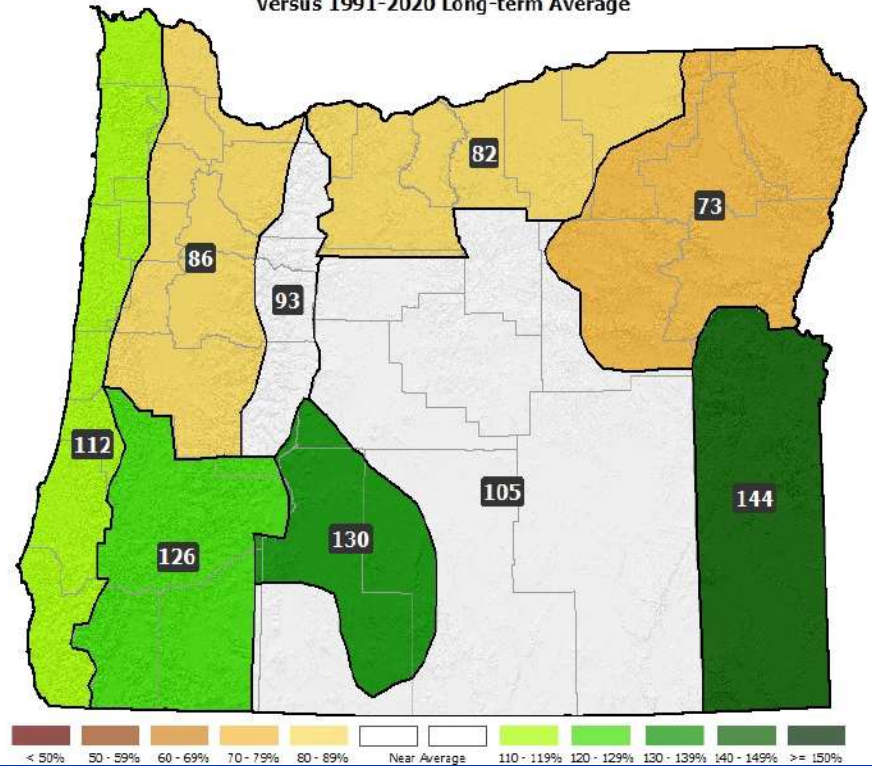
Forecast Precipitation

Actual Precipitation

March 2024 Forecast Precipitation Anomalies (% of Avg)
Based on 1958; 1966; 1973 Analog Years
Versus 1991-2020 Average



March 2024 Actual Precipitation Anomalies (% of Avg)
Versus 1991-2020 Long-term Average



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

March 2024

(Forecast Issued February 15, 2024)/(Actual)

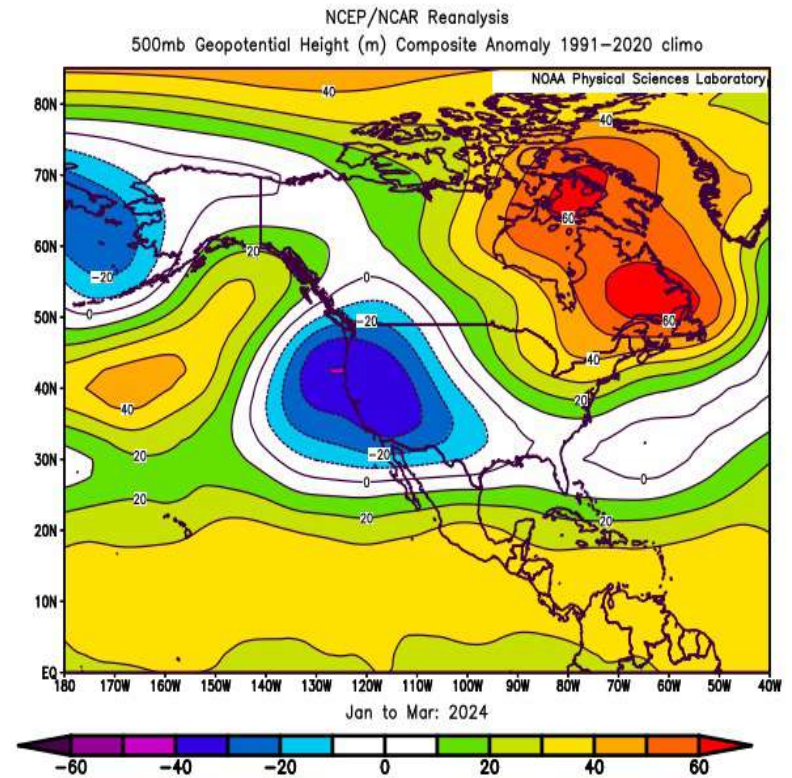
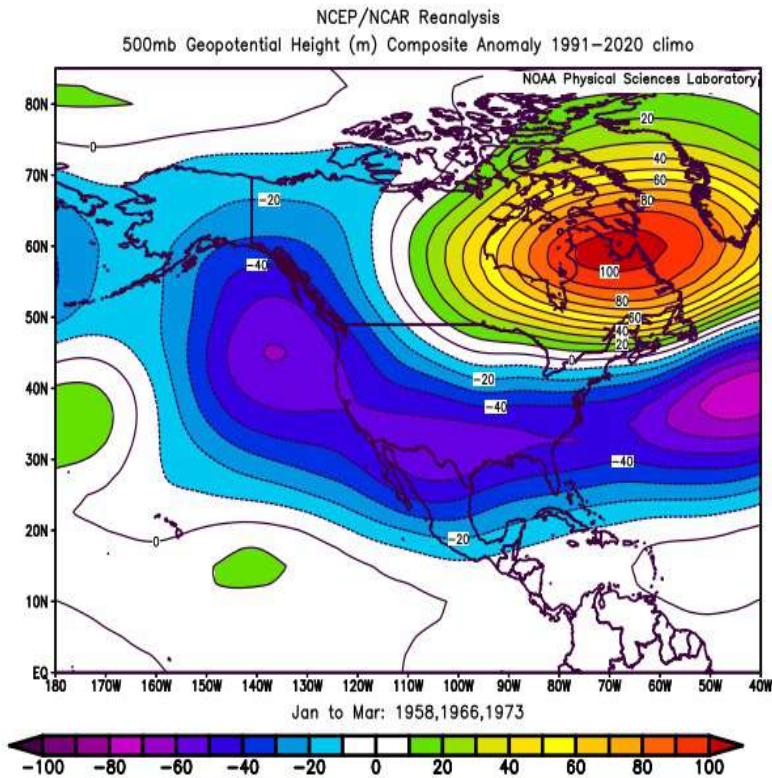
- All three analog years experienced near or below-average temperatures with a general “split-flow” jet stream pattern directing the punch of incoming storms towards California. (A pervasive “split-flow” jet stream pattern directed significant storm activity into California...keeping Oregon’s temperatures generally near or below average.) A “forecast hit.”
- Precipitation expected most days, but with the “split-flow” jet stream pattern centering the impacts over California. (There were more wet days than dry days across the state. As expected, the **El Niño** “split-flow” jet stream pattern brought more precipitation, relative to average, to the southern zones.) A “forecast hit.”

January – March 2024

(Forecast Issued December 21, 2023)/(Actual)

Forecast Upper-Air Anomalies

Actual Upper-Air Anomalies



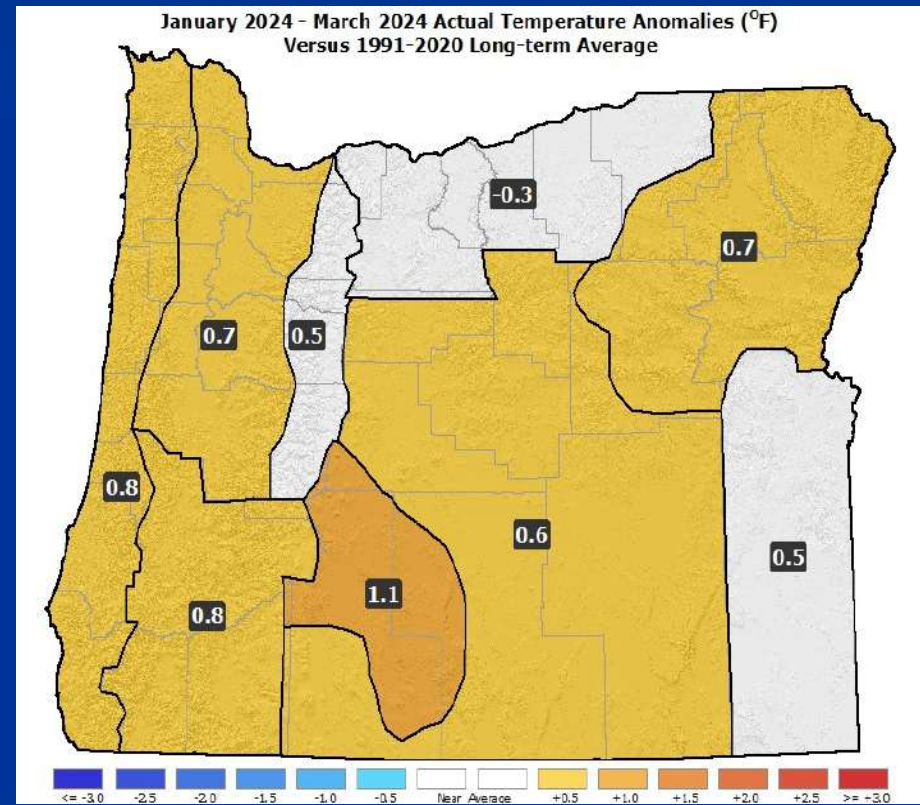
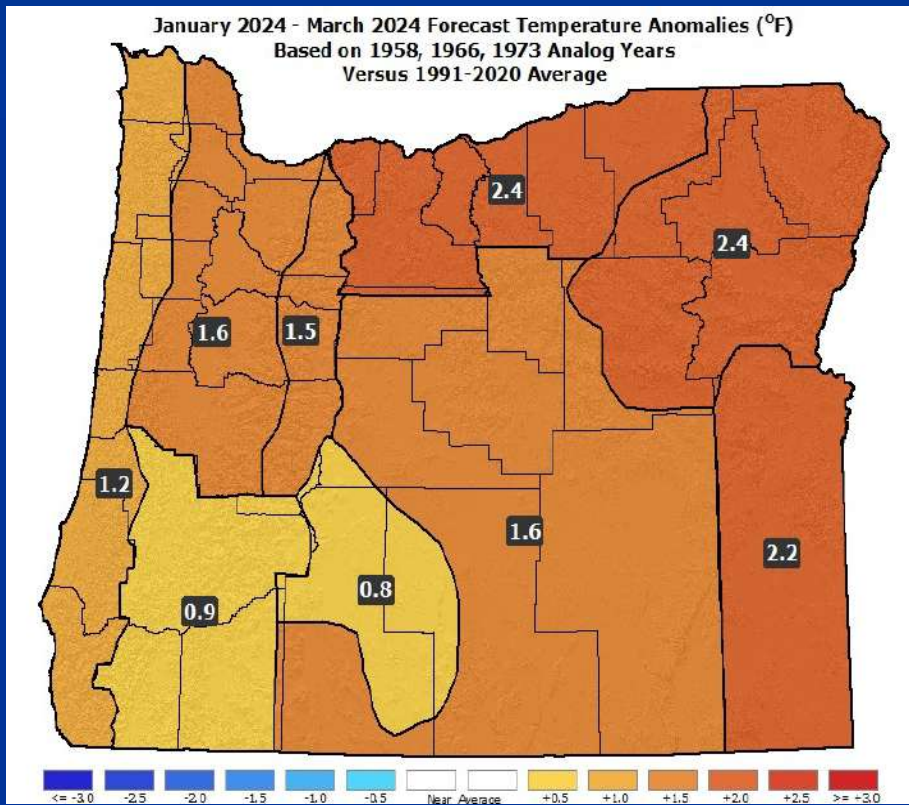
- Analogs (left) had a “split-flow” upper-air pattern with anomalous troughing along the west coast...remarkably like the observed pattern (right). *A “forecast hit.”*

January – March 2024

(Forecast Issued December 21, 2023) / (Actual)

Forecast Temperatures

Actual Temperatures



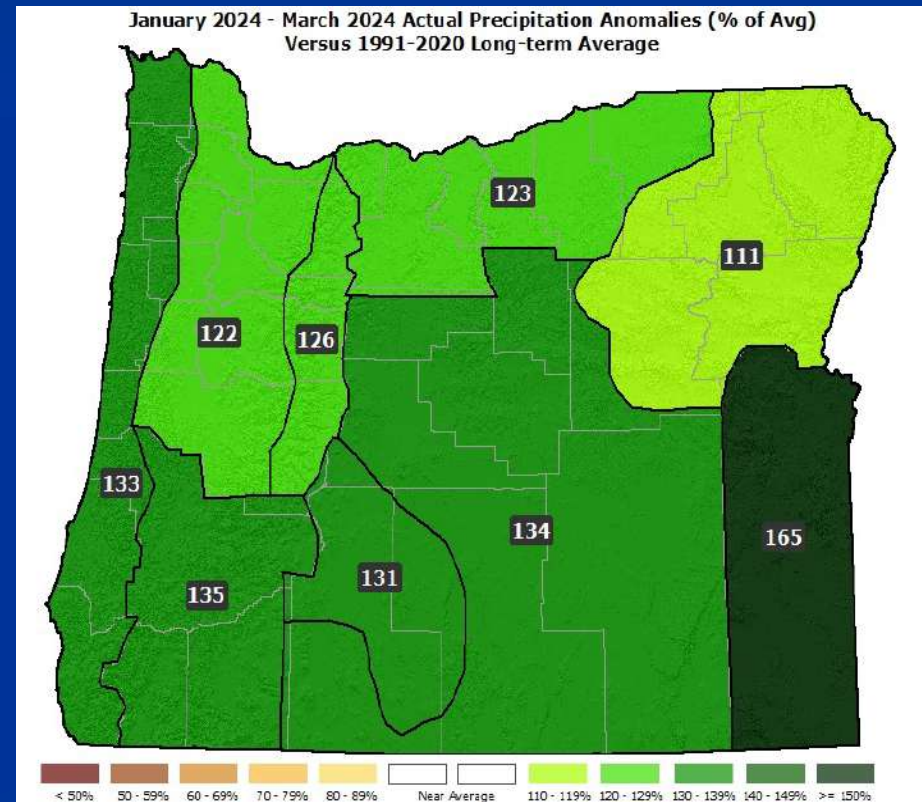
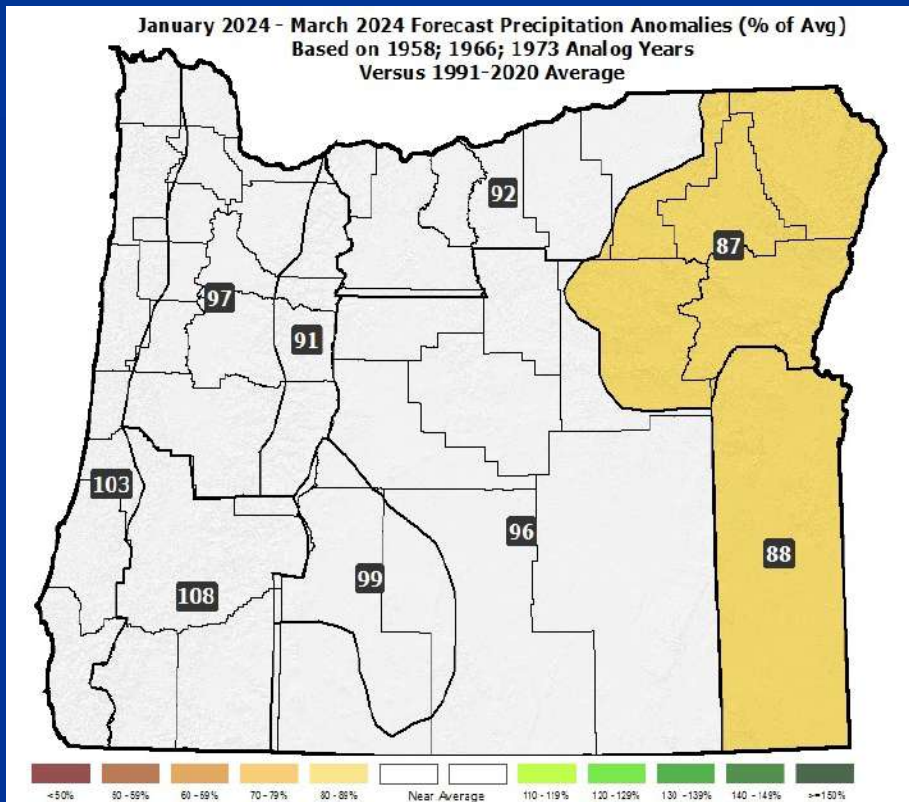
Data courtesy of the National Centers for Environmental Information (NCEI)

January – March 2024

(Forecast Issued December 21, 2023)/(Actual)

Forecast Precipitation

Actual Precipitation



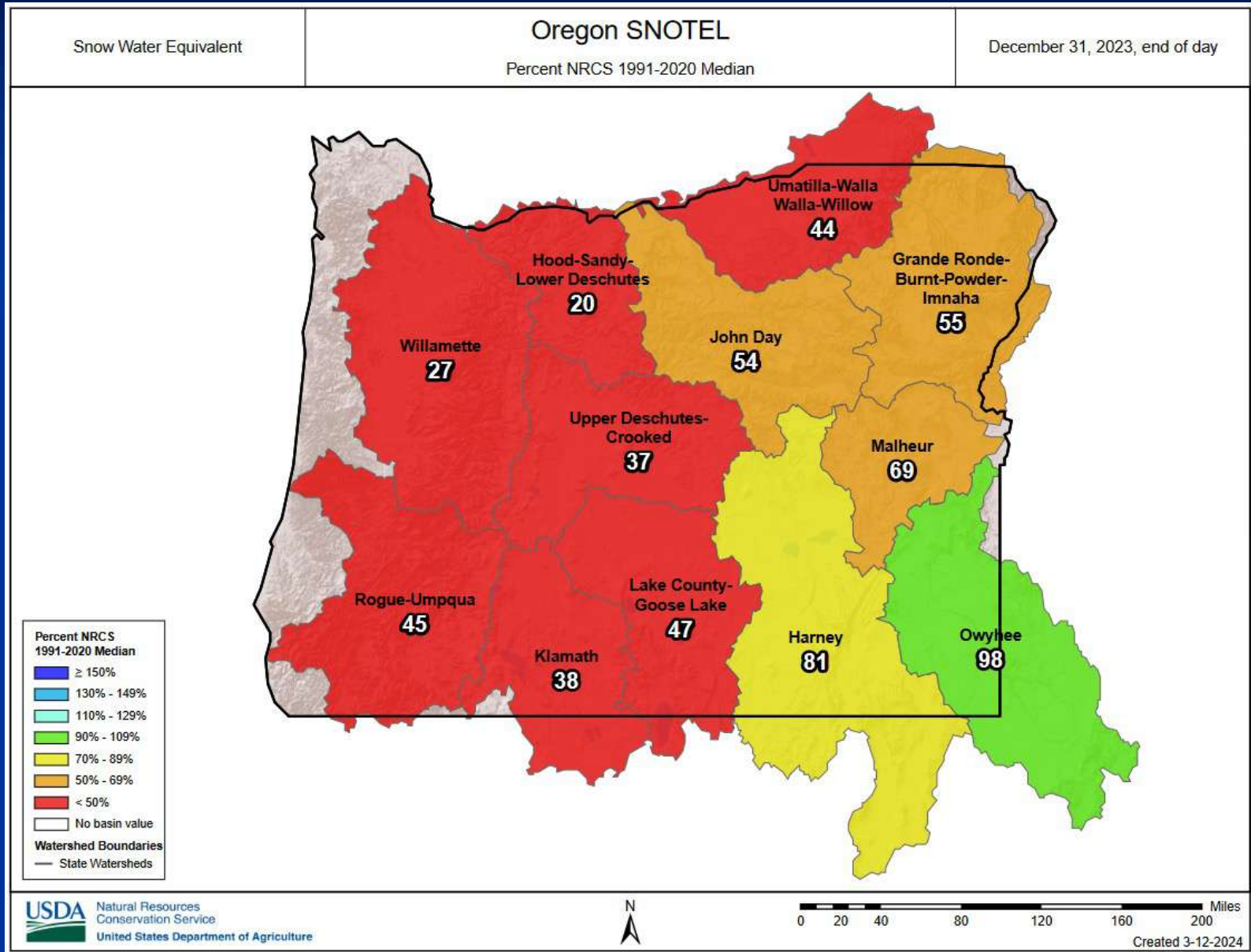
Data courtesy of the National Centers for Environmental Information (NCEI)

January – March 2024

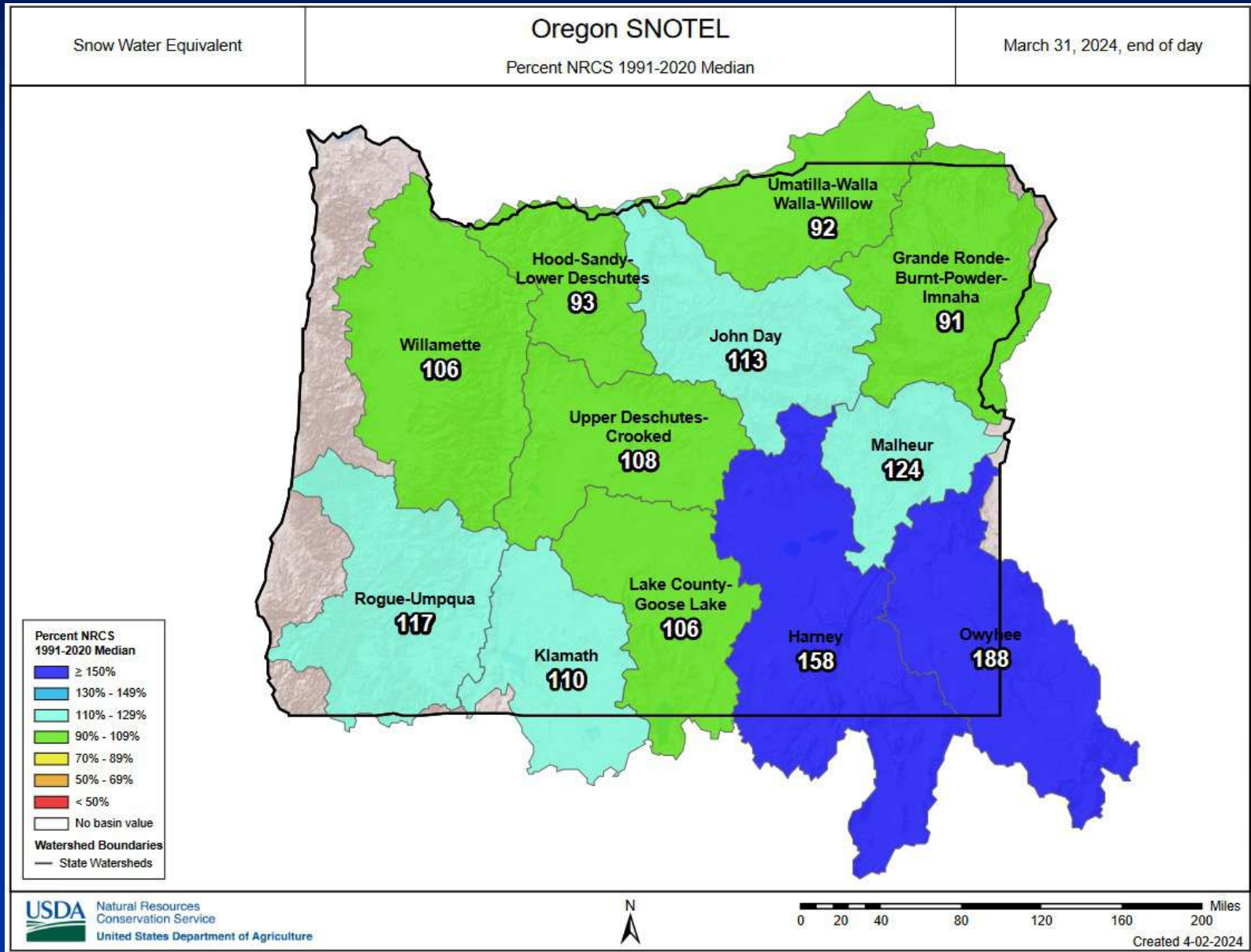
(Forecast Issued December 21, 2023)/(Actual)

- Above-average temperatures, especially in January and February. (The predicted cold snap for mid-December occurred in mid-January, across the northern zones, with considerable snow and ice. As expected, a mild pattern emerged in February with March bringing some cooling, relative to average. Actual temperatures were slightly cooler than predicted statewide.) A “*partial forecast hit.*”
- An abundance of days with precipitation but with overall values near average. The greatest chances for positive departures in the southern zones. (Precipitation was above average across all zones, especially south. Mountain snowpacks peaked at near normal north and above normal south.) A “*partial forecast hit.*”

Mostly Well-Below-Average Start to Snowpacks (end of 2023)

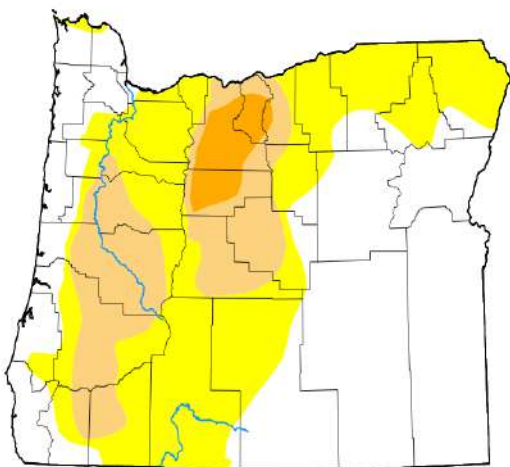


January - March Recovery in Snowpacks (end of March 2024)



Drought Improvement (over the past 3 months)

January 2, 2024



Map released: Thurs. January 4, 2024

Data valid: January 2, 2024 at 7 a.m. EST

Intensity

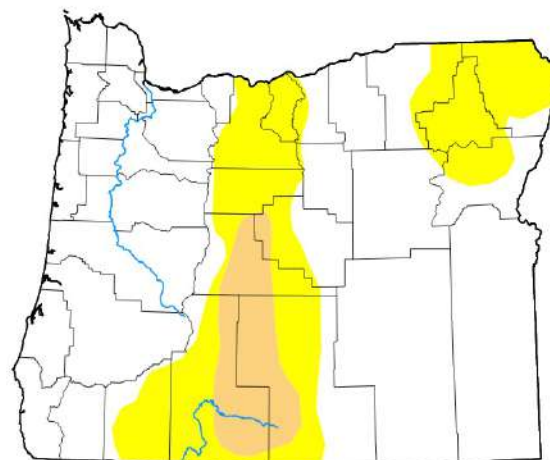
- None
- D0 (Abnormally Dry)
- D1 (Moderate Drought)
- D2 (Severe Drought)
- D3 (Extreme Drought)
- D4 (Exceptional Drought)
- No Data

Authors

United States and Puerto Rico Author(s):
[Lindsay Johnson](#), National Drought Mitigation Center

Pacific Islands and Virgin Islands Author(s):
[Richard Helm](#), NOAA/NCEI

April 9, 2024



Map released: Thurs. April 11, 2024

Data valid: April 9, 2024 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 Pugh](#), NOAA/CPC

Pacific Islands and Virgin Islands Author(s):
[Anthony Artusa](#), NOAA/NWS/NCEP/CPC

Courtesy: National Drought Mitigation Center (NDMC)

<https://droughtmonitor.unl.edu/>

Forecast Resources

- ODA Seasonal Climate Forecast Home:

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

- CPC Official US Three-Month Forecasts (Graphics):

https://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=01

- CPC US 30-Day & 90-Day Forecasts (Discussions):

https://www.cpc.ncep.noaa.gov/products/predictions/long_range/fxus07.html

- CPC Weekly & Monthly ENSO Discussions:

https://www.cpc.ncep.noaa.gov/products/analysis_monitoring/enso_advisory

- Australian Government Climate Model Summary:

<http://www.bom.gov.au/climate/model-summary/#region=NINO34&tabs=Overview>

- Australian Government ENSO Wrap-Up:

<http://www.bom.gov.au/climate/enso>

- IRI ENSO Quick Look:

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

Water Supply / Fire-Potential Outlook

- CPC U.S. Seasonal Drought Outlook:

https://www.cpc.ncep.noaa.gov/products/expert_assessment/season_drought.png

- NRCS Snow Water Equivalent Oregon Map:

https://www.wcc.nrcs.usda.gov/ftpref/data/water/wcs/gis/maps/or_swepctnormal_update.pdf

- NRCS/USDA Snow Water Equivalent Products:

<https://www.nrcs.usda.gov/wps/portal/wcc/home/snowClimateMonitoring/snowpack/>

- NDMC U.S. Drought Monitor:

<https://droughtmonitor.unl.edu/>

- NIDIS North American Drought Portal:

<https://www.drought.gov/nadm/content/percent-average-precipitation>

- WRCC WestWideDroughtTracker:

<https://www.wrcc.dri.edu/wwdt/>

- NWCC Northwest Interagency Coordination Center (video)

<https://gacc.nifc.gov/nwcc/predict/outlook.aspx>

Updated Mid-Month



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