



Seasonal Climate Forecast

January – March 2025

Issued: December 19, 2024

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

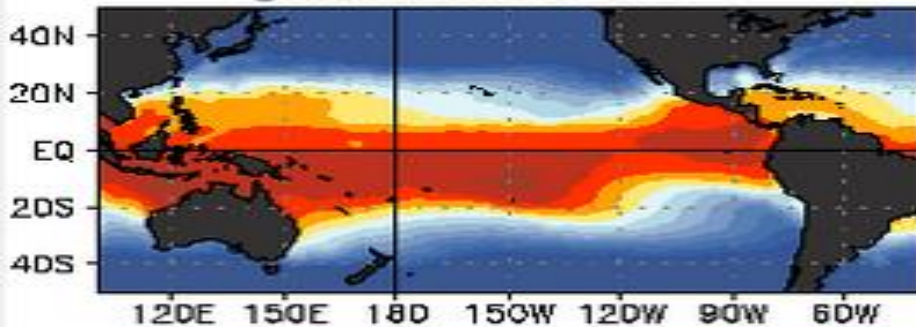
ODA Team: Diana Walker; Andy Zimmerman; Jenn Ambrose; Taylor Harding
ODF Team: Julie Vondrachek; Kristin Cody

El Niño vs La Niña

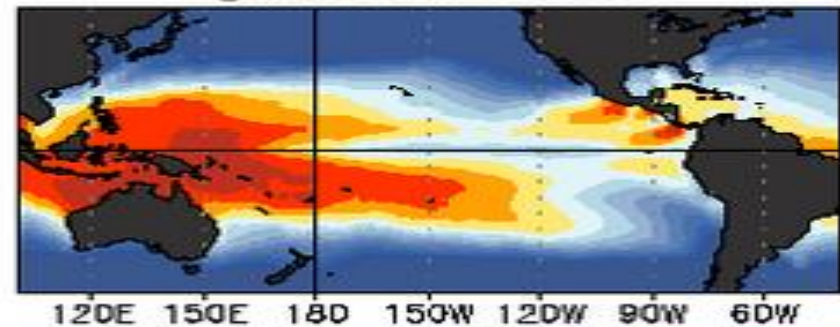
(SST Patterns in the Tropical Pacific Ocean)

OCEAN TEMPERATURES (°C)

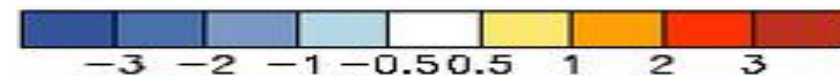
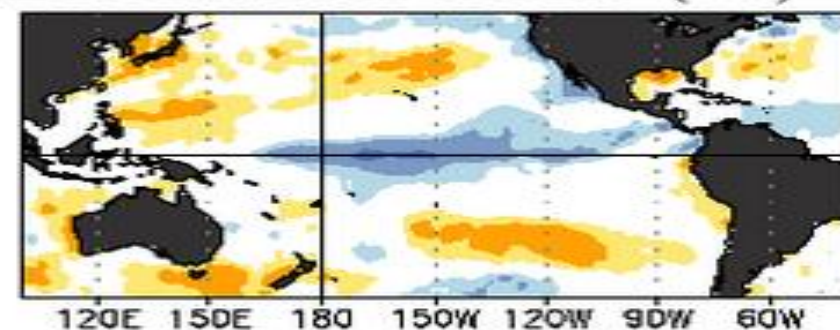
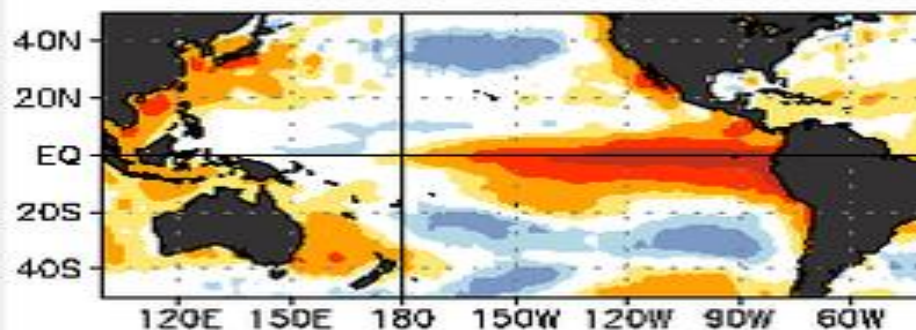
EL NIÑO
Jan-Mar 1998



LA NIÑA
Jan-Mar 1989



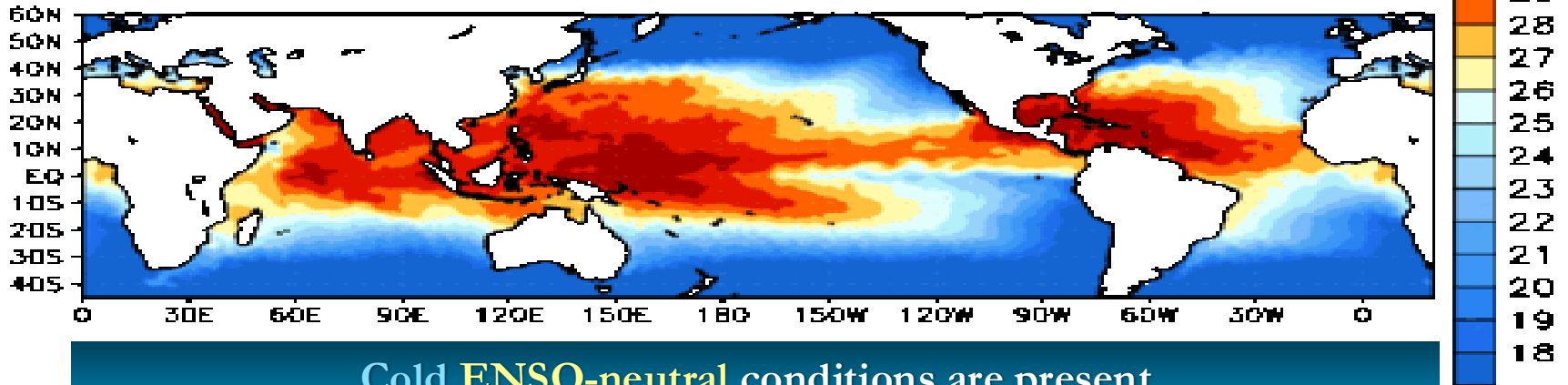
OCEAN TEMPERATURE DEPARTURES (°C)



Sea Surface Temperatures (SSTs)

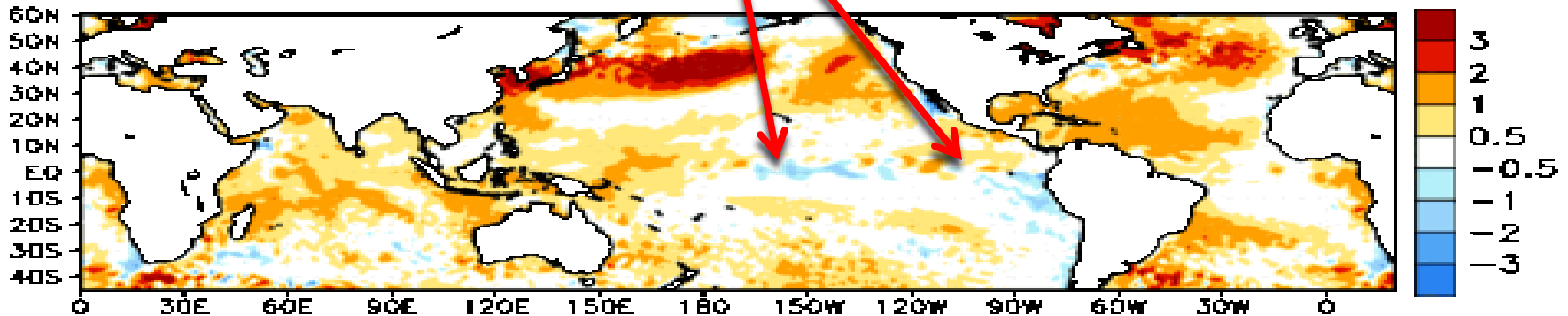
Animated (PowerPoint only) SSTs (top) / Anomalies (bottom)

Week centered on 25 SEP 2024
SST (°C)



Cold ENSO-neutral conditions are present

Anomalies (°C)



El Niño Southern Oscillation (ENSO)

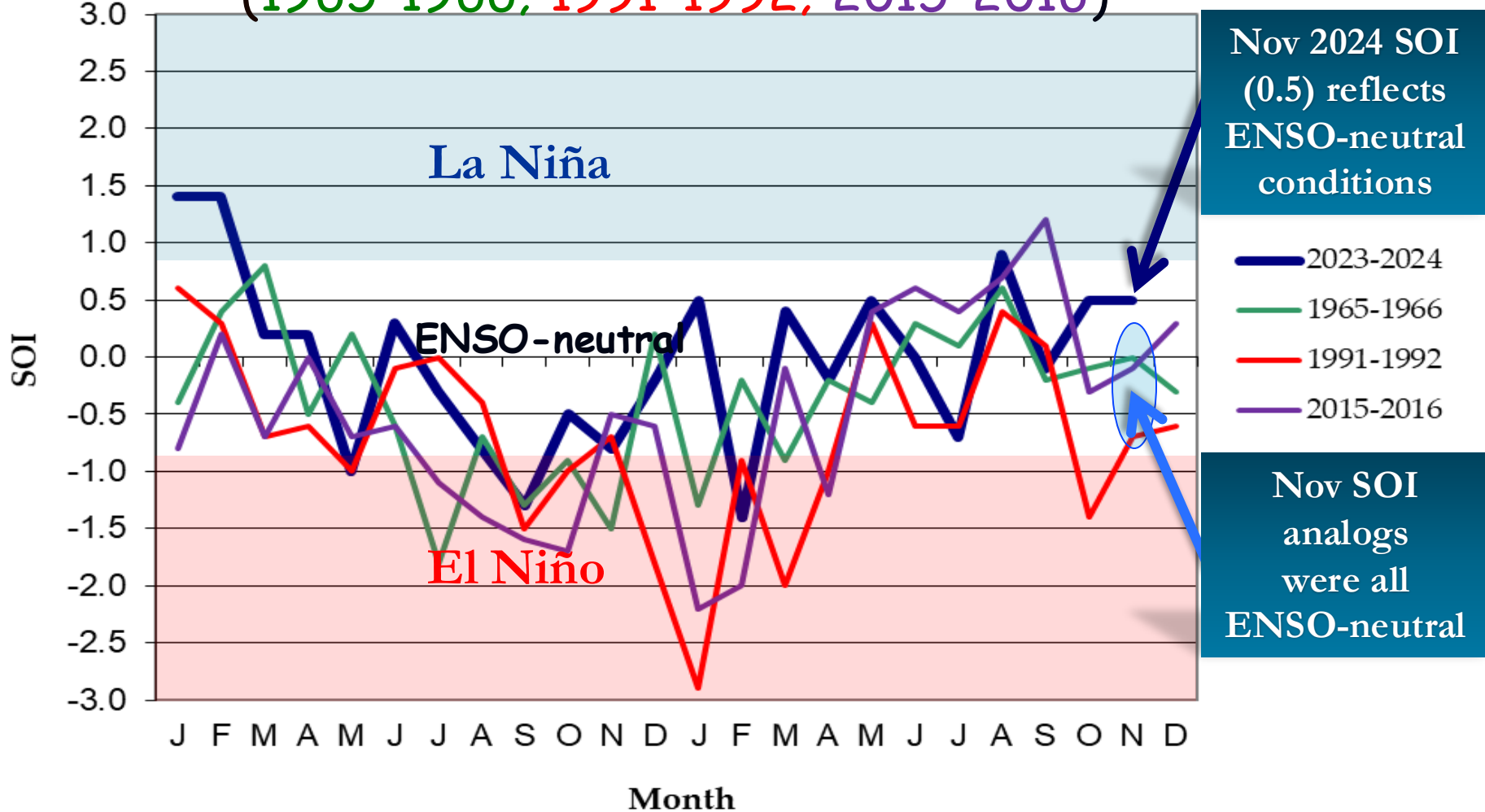
Current Status and Forecast

- A November Southern Oscillation Index (SOI) of 0.5 reflected stronger-than-average trade winds in the equatorial Pacific Ocean.
- The September – November Oceanic Niño Index (ONI) remained -0.2°C , reflecting near-to-below average sea surface temperatures (“SSTs”) in the central equatorial Pacific Ocean (within the cold ENSO-neutral range).
- NOAA’s Climate Prediction Center (CPC) expects a transition from cold ENSO-neutral to weak La Niña during the November 2024 – January 2025 period, then back to ENSO-neutral by March – May 2025.

Note: This “Seasonal Climate Forecast” does not consider NOAA’s ENSO forecast. It uses only historical and current ENSO conditions to find “analog years” that most-closely match the recent evolution of the ENSO state.

Southern Oscillation Index (SOI)

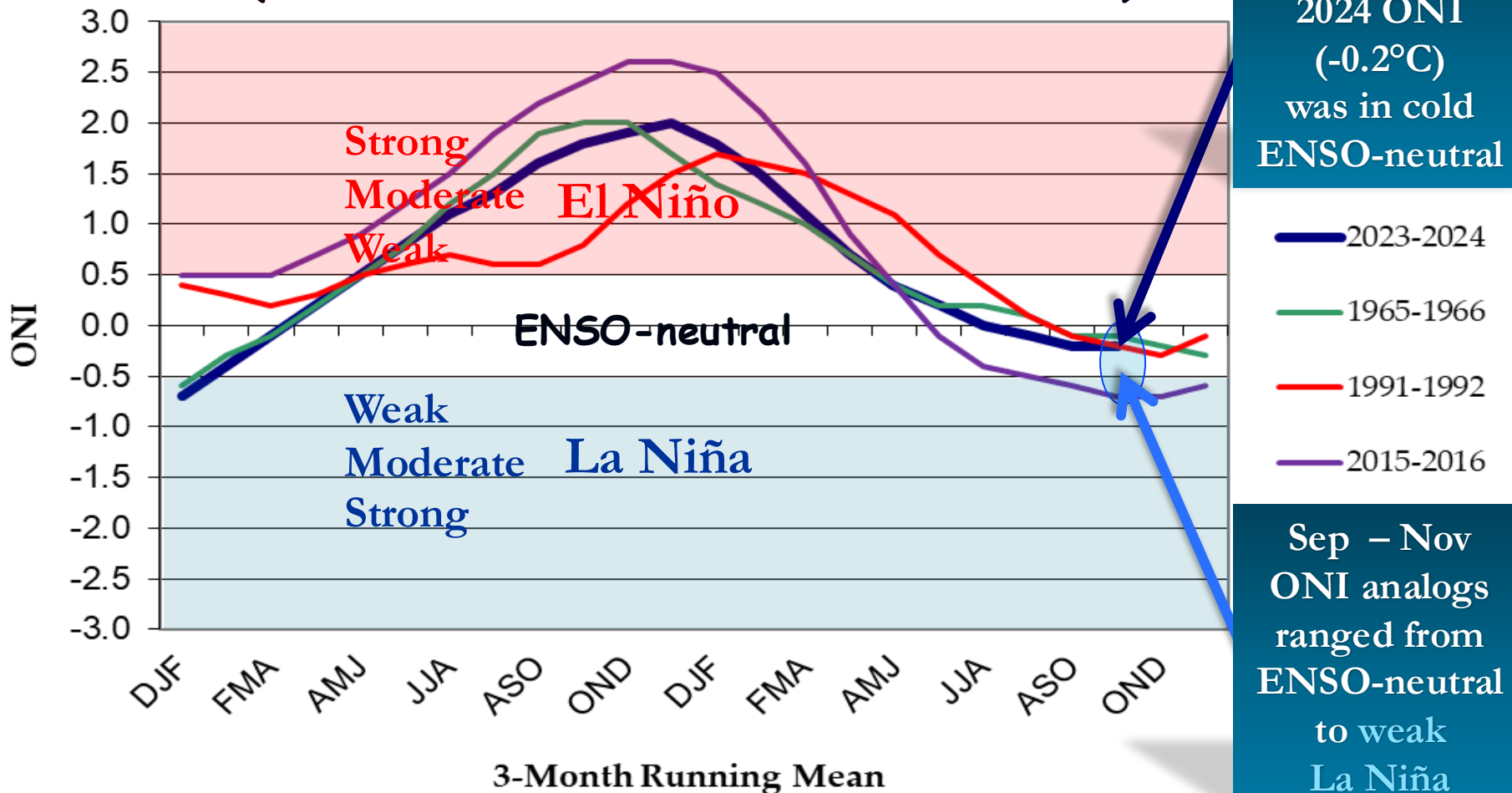
SOI values from the top "analog years" compared with the current period (2023-2024)
(1965-1966; 1991-1992; 2015-2016)



SOI data courtesy <https://www.cpc.ncep.noaa.gov/data/indices/soi>

Oceanic Niño Index (ONI)

ONI values from the top "analog years"
 compared with the current period (2023-2024)
 (1965-1966; 1991-1992; 2015-2016)

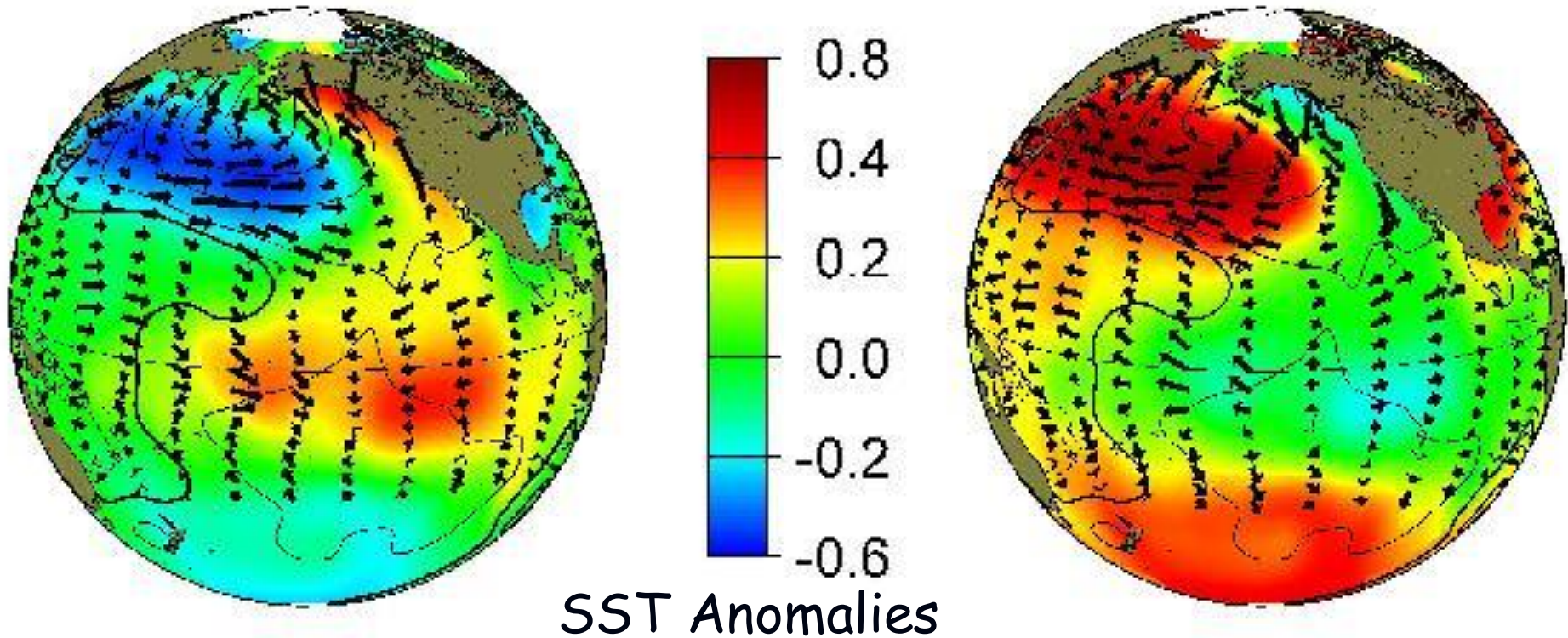


The Pacific Decadal Oscillation (PDO)

(Reflects SST "Phase" in the North Pacific Ocean)

Positive (Warm)
"Phase"

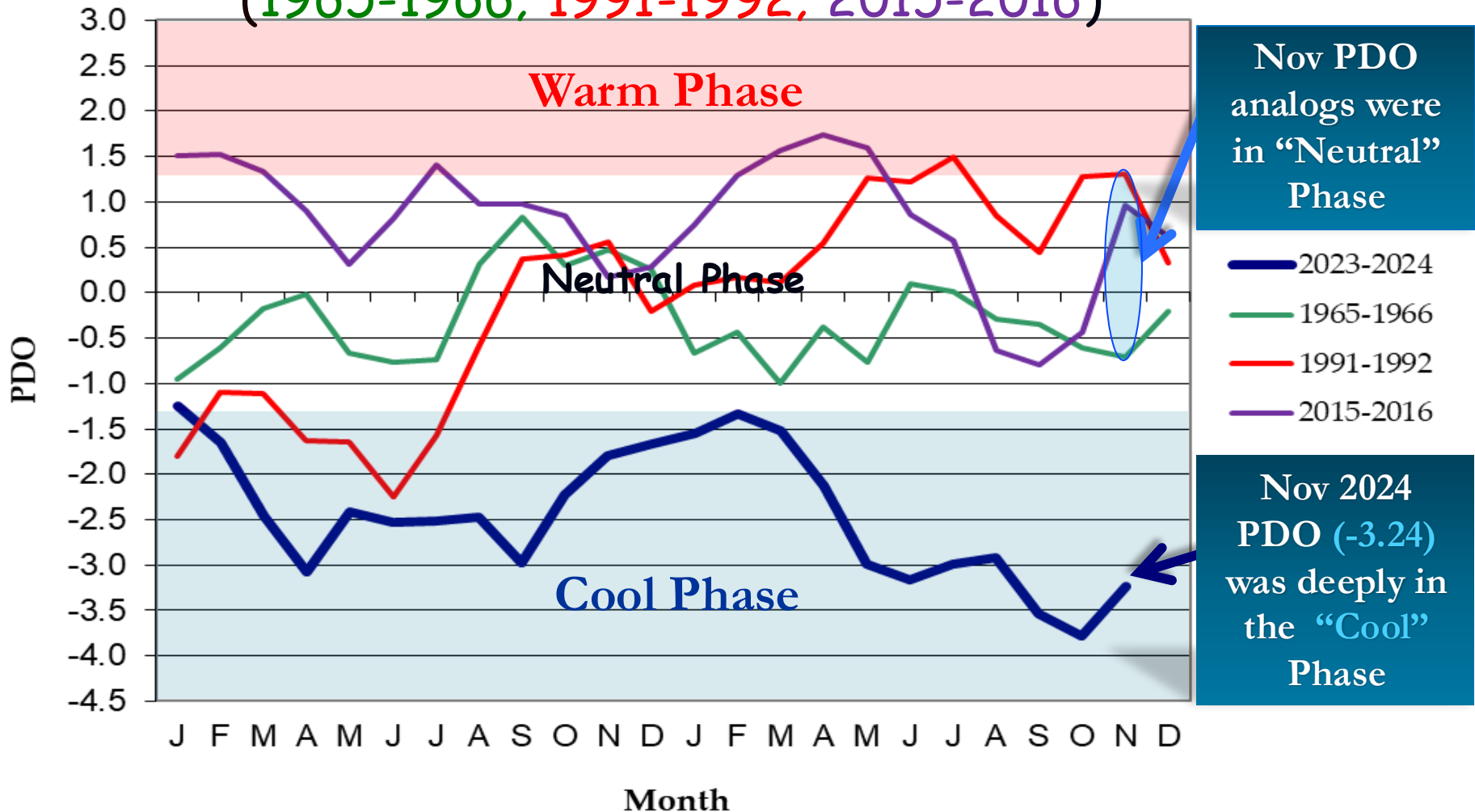
Negative (Cool)
"Phase"



North Pacific Ocean

(Poleward of 20°N Latitude)

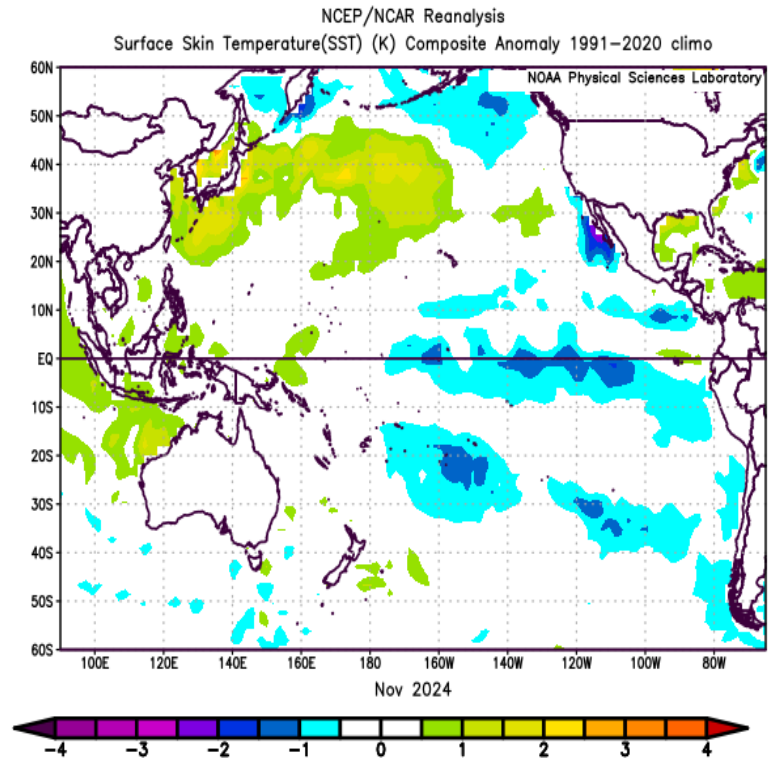
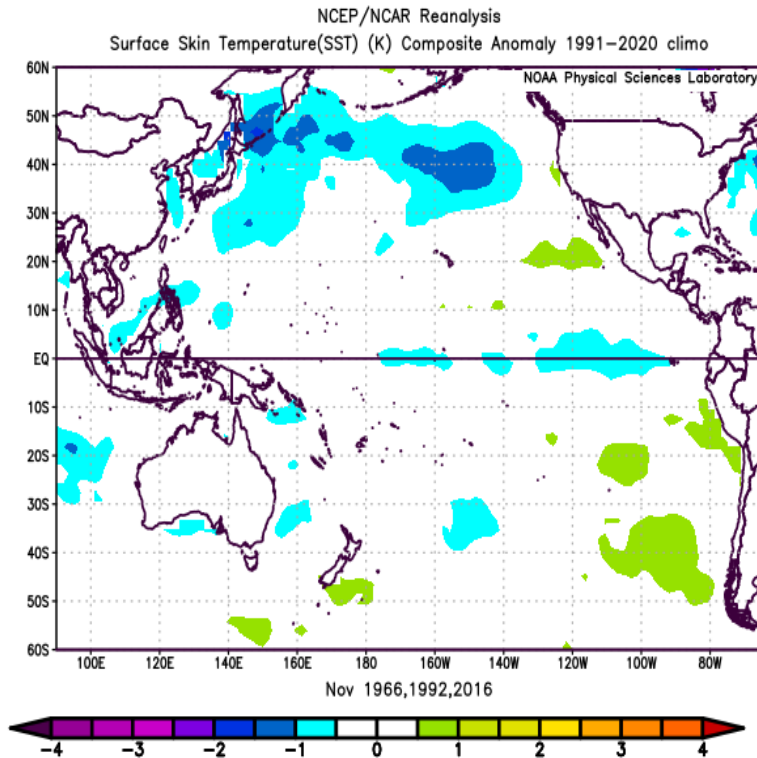
PDO values from the top "analog years" compared with the current period (2023-2024)
(1965-1966; 1991-1992; 2015-2016)



SST Anomalies Comparison

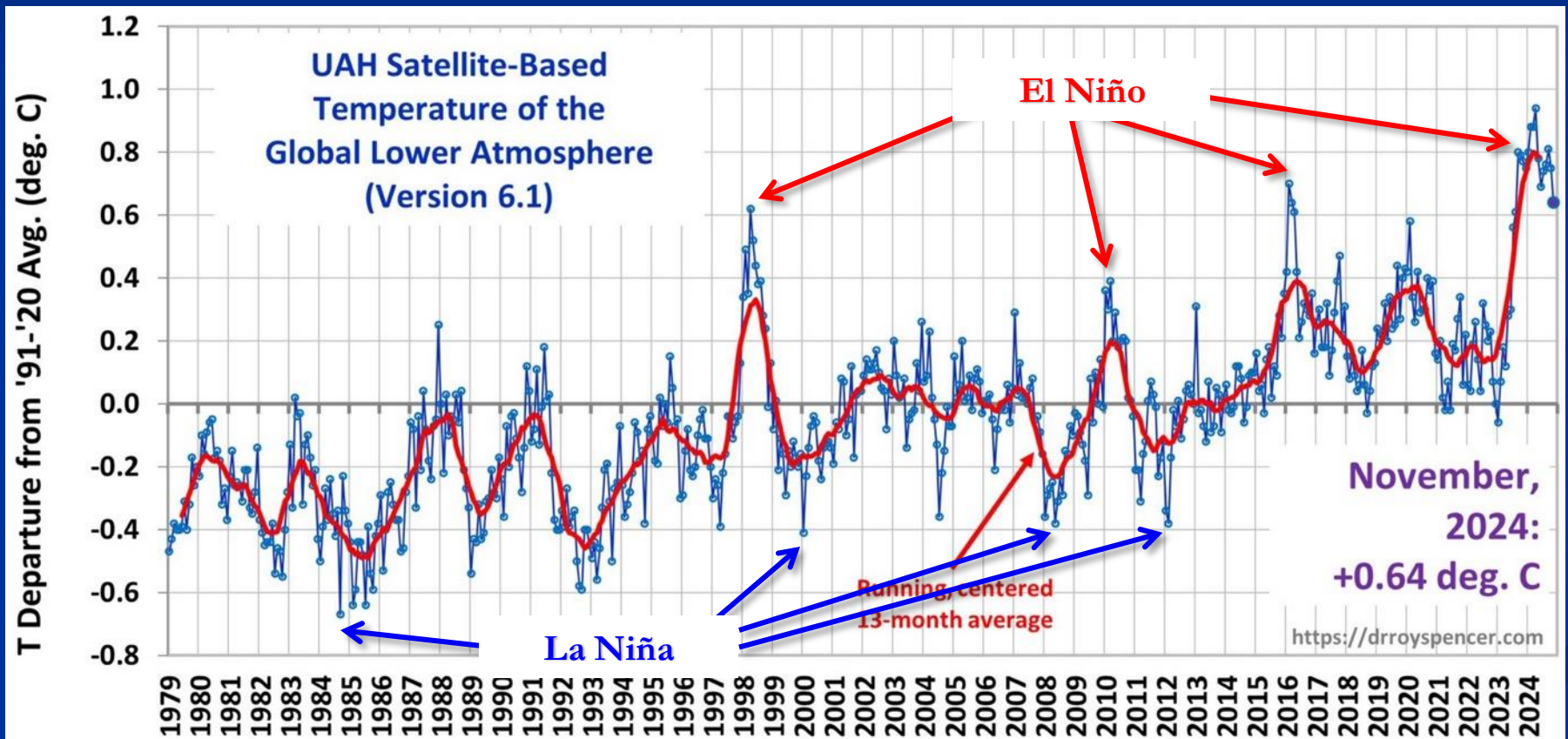
November Analogs

November 2024



- The SST anomalies of both the November analog composite (left) and November 2024 (right) reflected ENSO-neutral conditions, with the latter having stronger negative temperature anomalies in the central & eastern equatorial Pacific Ocean. No great “matches” could be found.

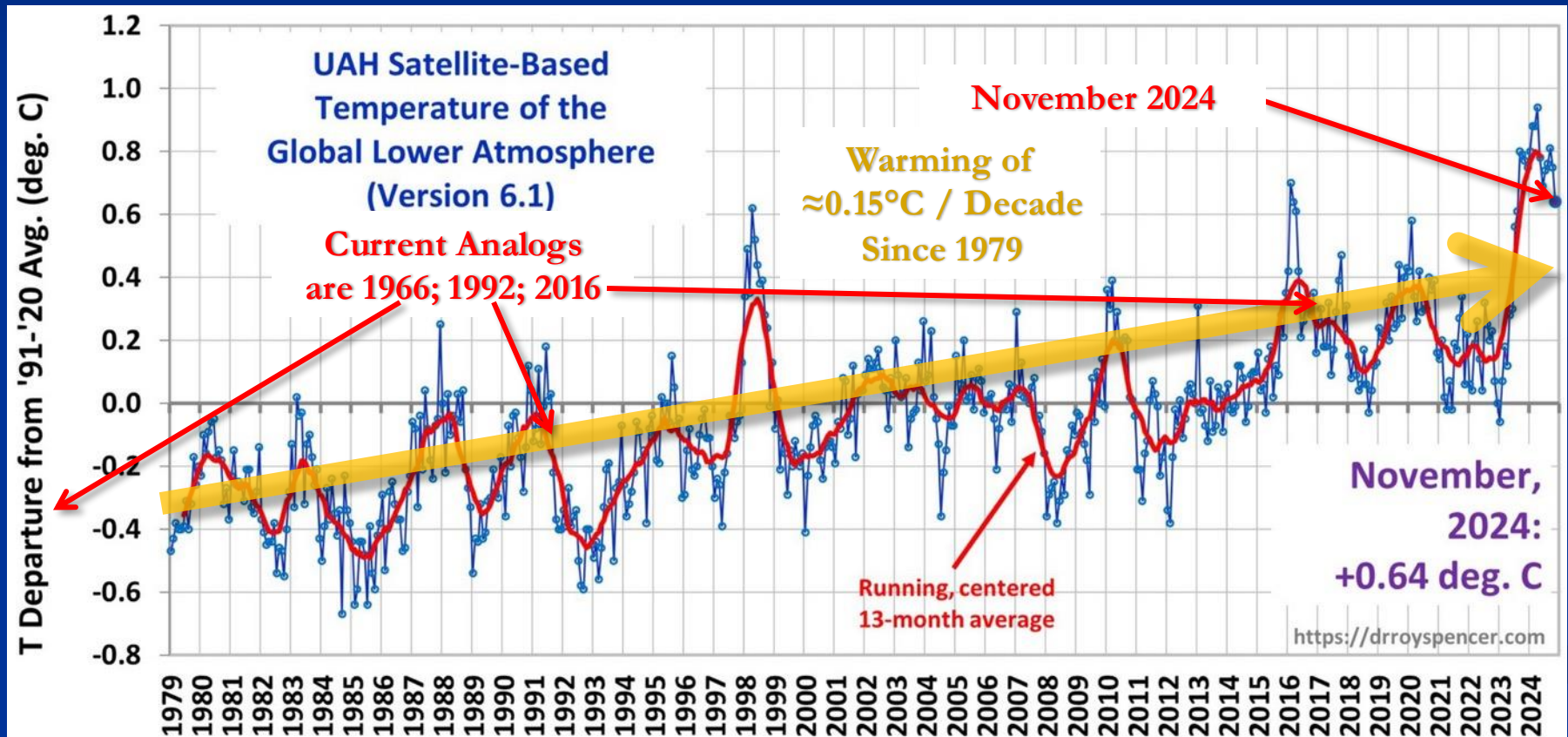
El Niño & La Niña Impact Global Temperatures...



Courtesy: <http://www.drroyspencer.com/latest-global-temperatures/>

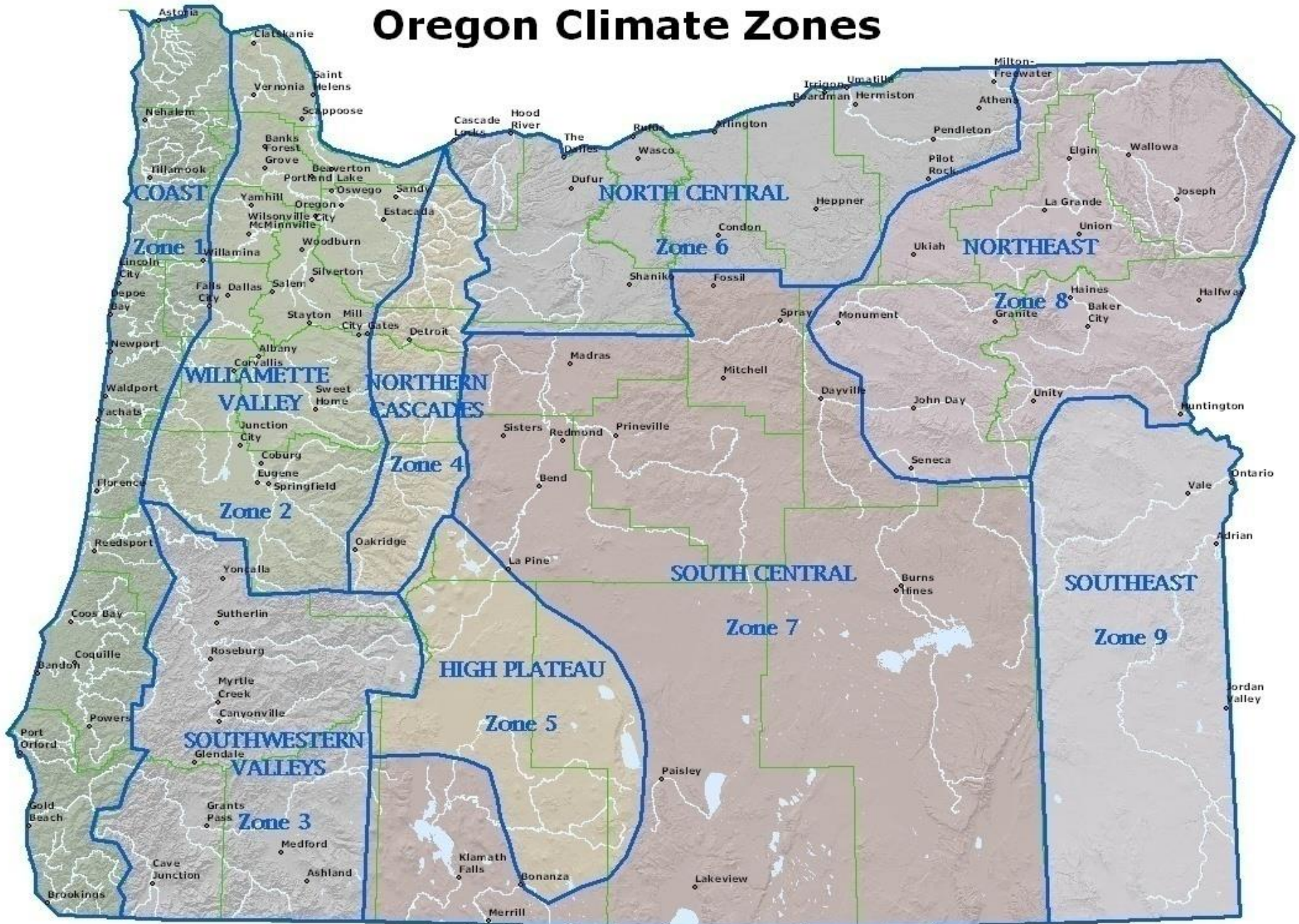
Global Temperature Trends

Increase Error in Analog Forecasts!



Courtesy: <http://www.drroyspencer.com/latest-global-temperatures/>

Oregon Climate Zones

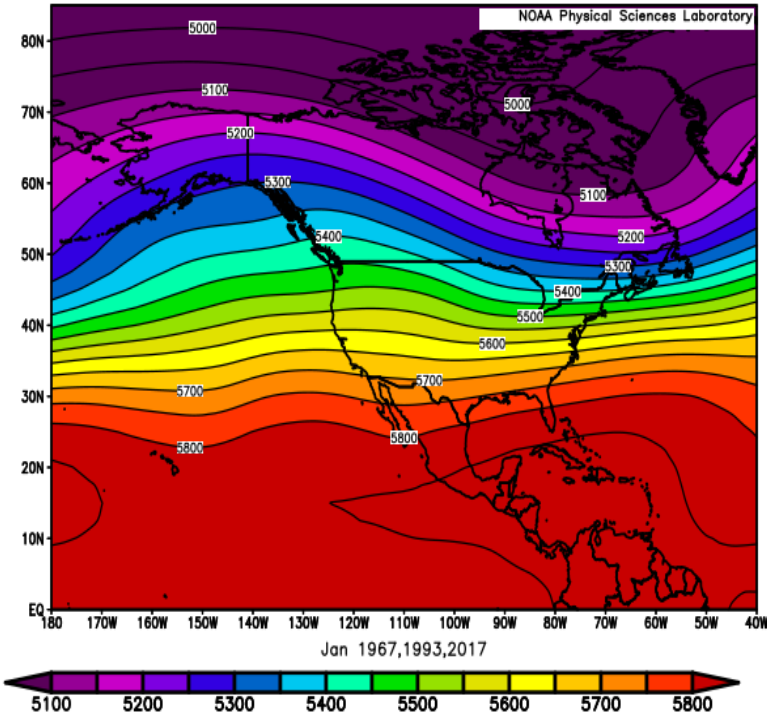


January 2025 Forecast

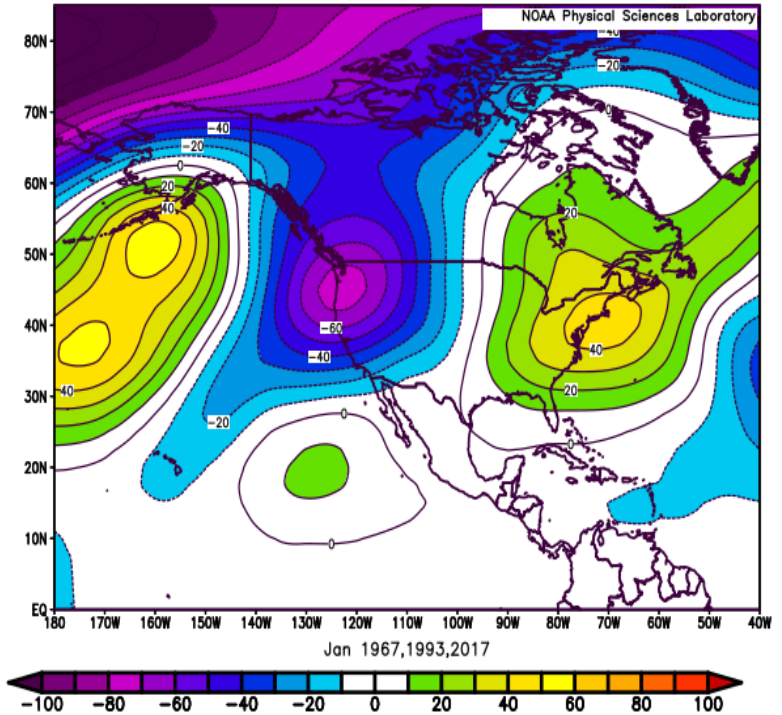
Mean Upper-Air Pattern

Upper-Air Anomalies

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



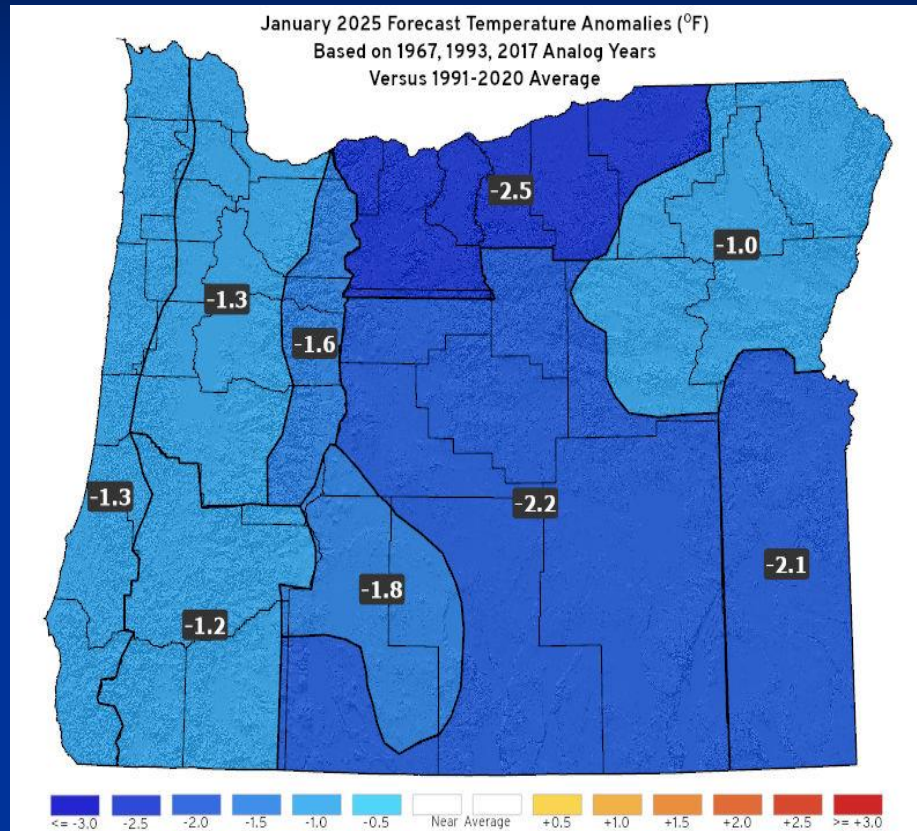
NCEP/NCAR Reanalysis
500mb Geopotential Height (m) Composite Anomaly 1991–2020 climo



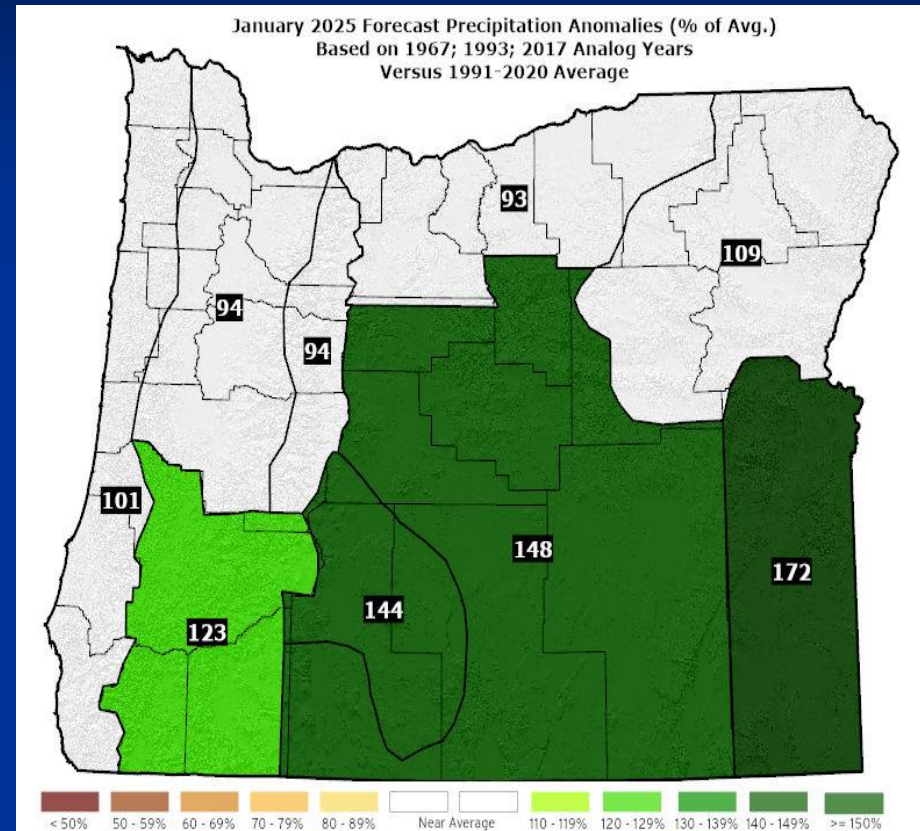
- Analogs all had anomalous mean ridging in the Gulf of Alaska with subsequent downstream troughing over the Pacific Northwest.
- The composite (above) shows anomalous troughing centered on NW Oregon, but analogs had significant variation in its location.

January 2025 Forecast

Temperatures



Precipitation

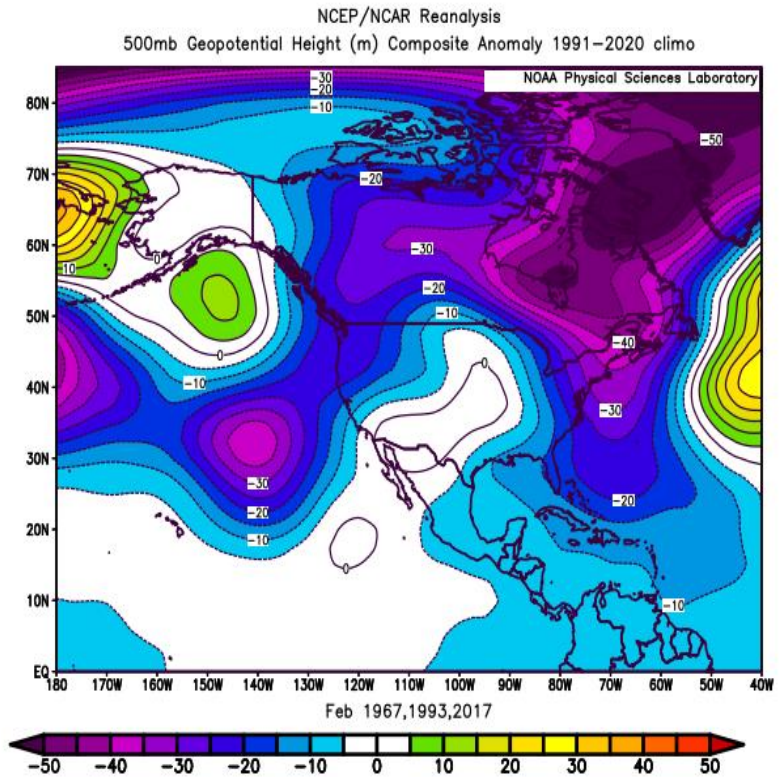
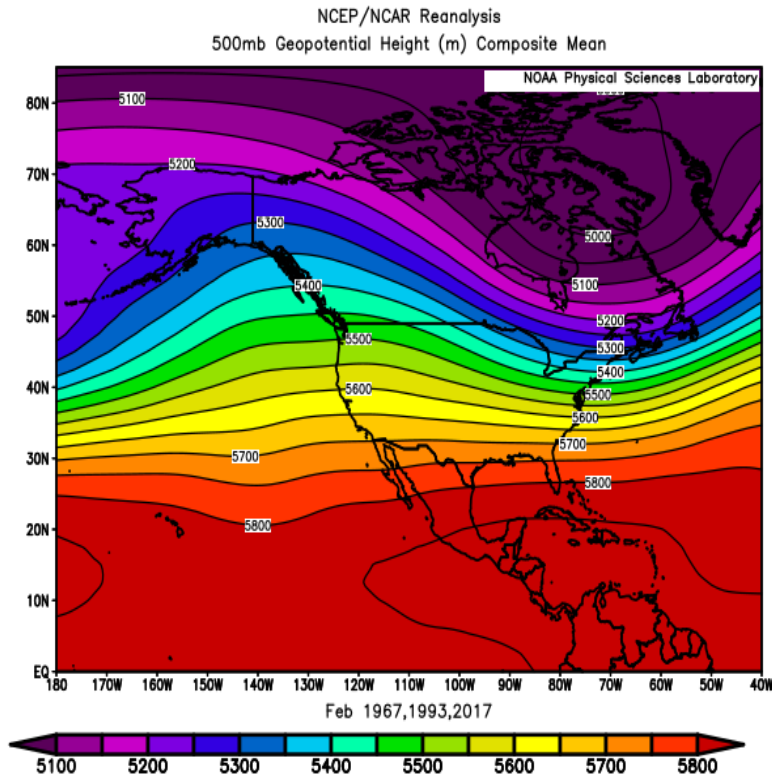


- 1967 centered anomalous troughing offshore. Strong storms produced high winds & heavy mountain snow, especially south...lowlands stayed mild. 1993 & 2017 had troughing centered over Oregon, bringing less precipitation but much colder temperatures and lowland snow.

February 2025 Forecast

Mean Upper-Air Pattern

Upper-Air Anomalies

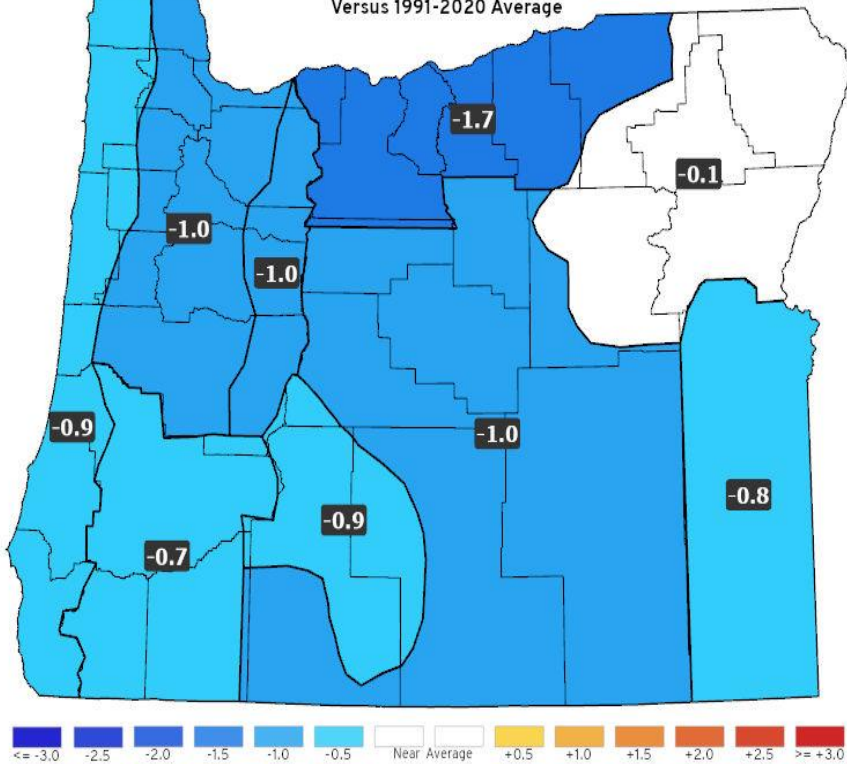


- Huge variation among analogs... 1967 had anomalous ridging over Oregon, while 1993 & 2017 maintained anomalous troughing.
- A blend of the analog years (shown above) favors more upper-level troughing than normal.

February 2025 Forecast

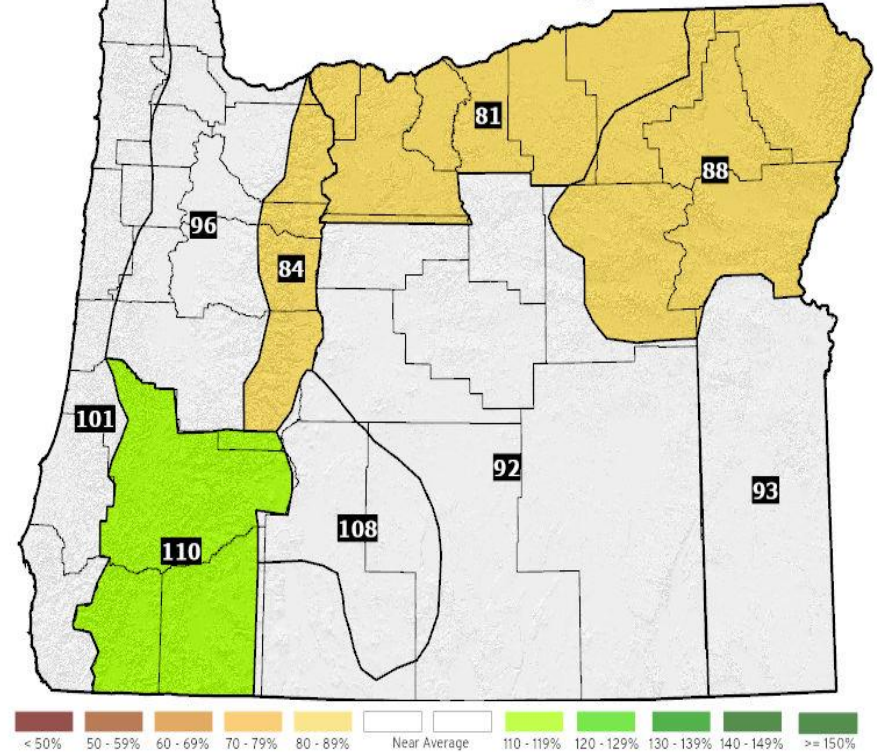
Temperatures

February 2025 Forecast Temperature Anomalies (°F)
Based on 1967, 1993, 2017 Analog Years
Versus 1991-2020 Average



Precipitation

February 2025 Forecast Precipitation Anomalies (% of Avg.)
Based on 1967; 1993; 2017 Analog Years
Versus 1991-2020 Average

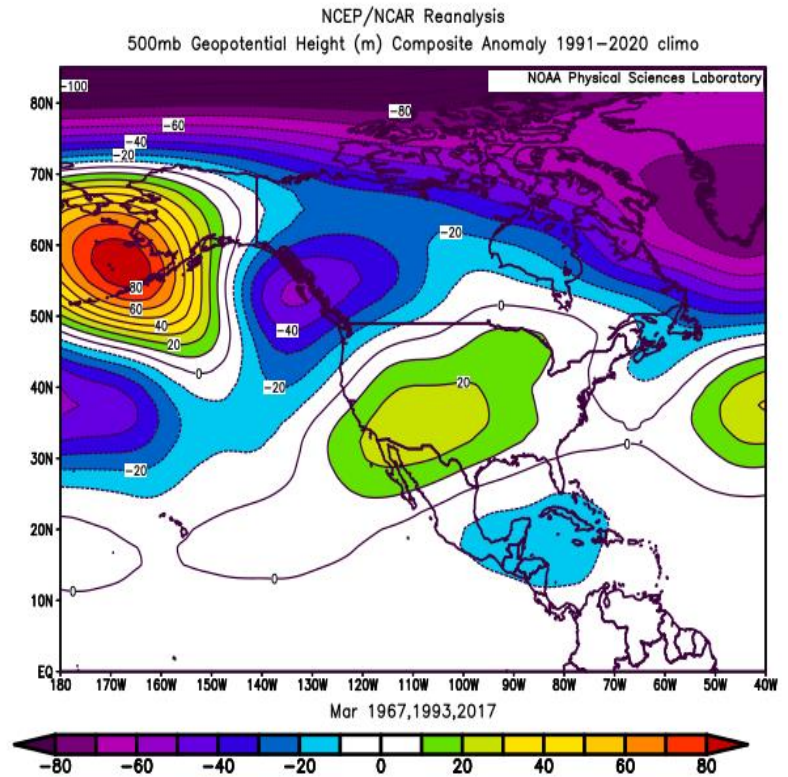
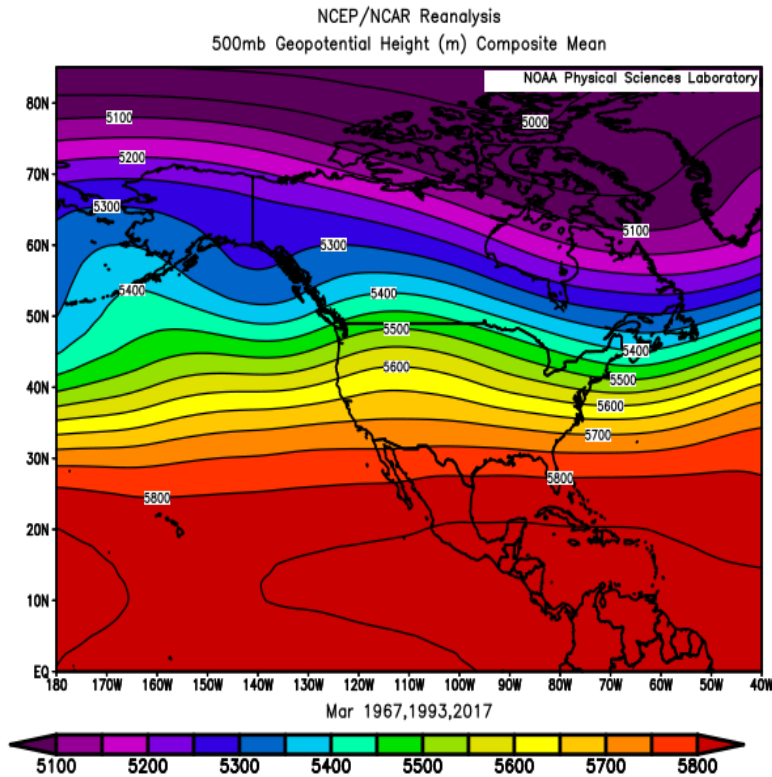


- Huge variation among the analog years, ranging from a warm & dry 1967 to a cool & very wet 2017.
- Current analog “blend” favors slightly cooler than average with near-normal precipitation, but an analog update is likely prior to February...

March 2025 Forecast

Mean Upper-Air Pattern

Upper-Air Anomalies

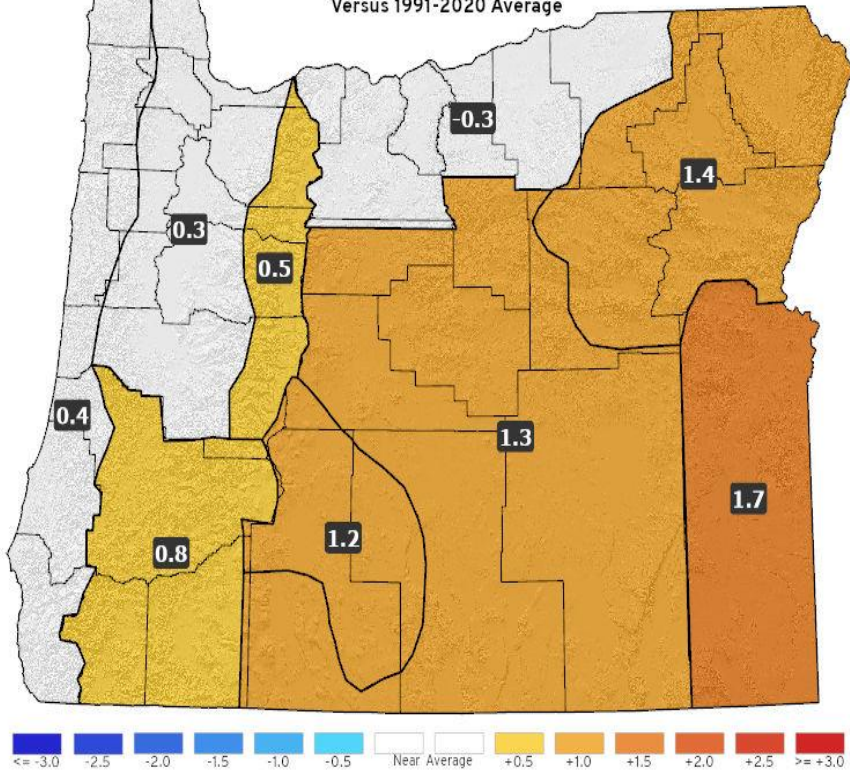


- Analogs were mixed...ranging from anomalous troughing over Oregon (1967) to anomalous ridging over Oregon (1993).
- The analog blend (above) puts minimal anomalies over Oregon with prevailing SW flow aloft, which is typical for March.

March 2025 Forecast

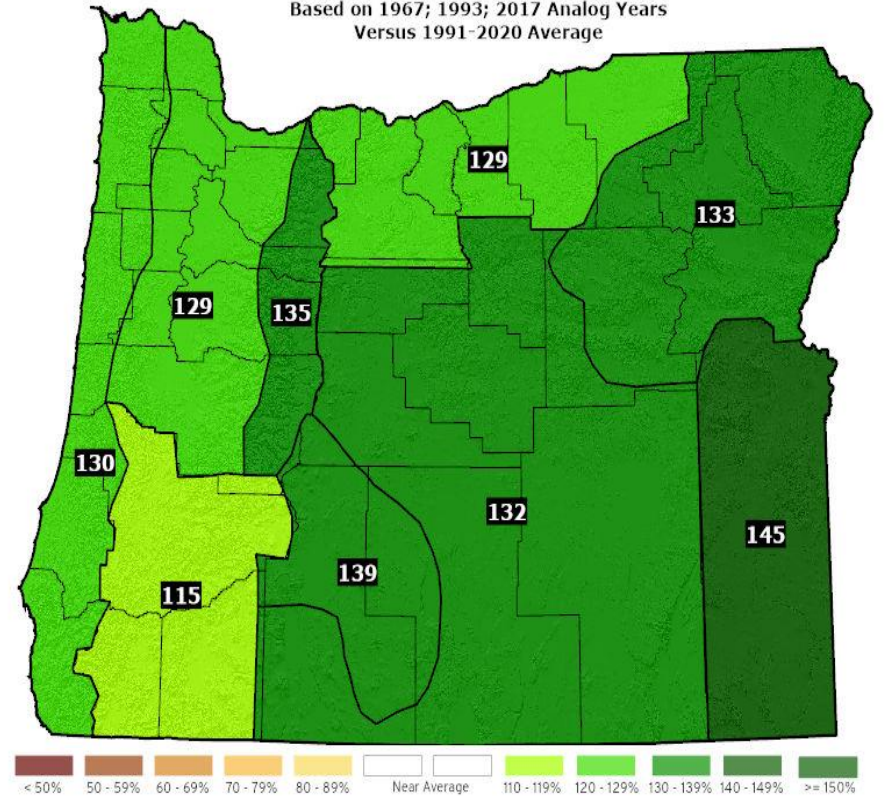
Temperatures

March 2025 Forecast Temperature Anomalies (°F)
Based on 1967, 1993, 2017 Analog Years
Versus 1991-2020 Average



Precipitation

March 2025 Forecast Precipitation Anomalies (% of Avg.)
Based on 1967; 1993; 2017 Analog Years
Versus 1991-2020 Average



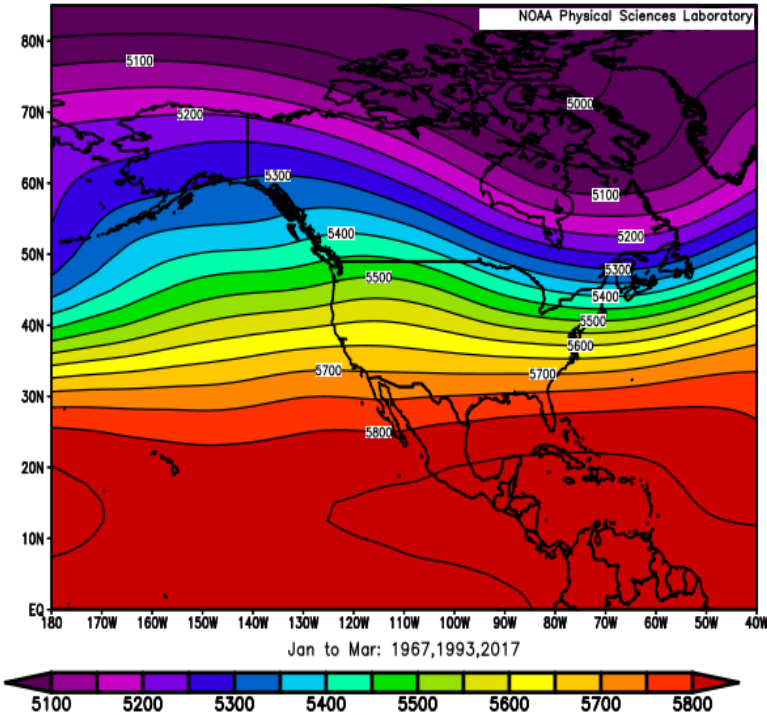
- A relatively cool and dry 1967 is offset (above) by the relatively warmer and wet 1993 & 2017 analogs.
- Forecast confidence is reduced, because of diverging analog solutions. An analog update is likely prior to the February forecast (for March).

January – March 2025 Forecast

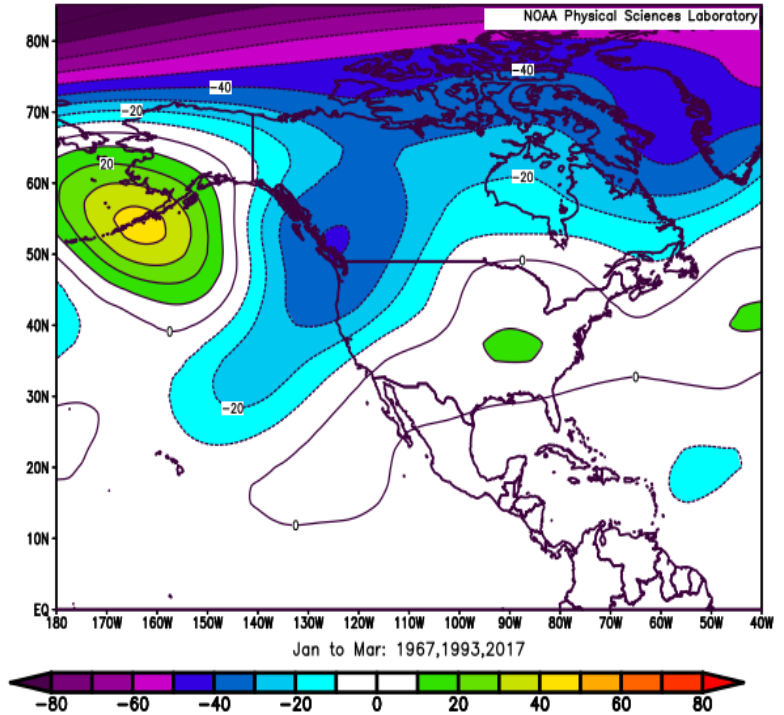
Mean Upper-Air Pattern

Upper-Air Anomalies

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



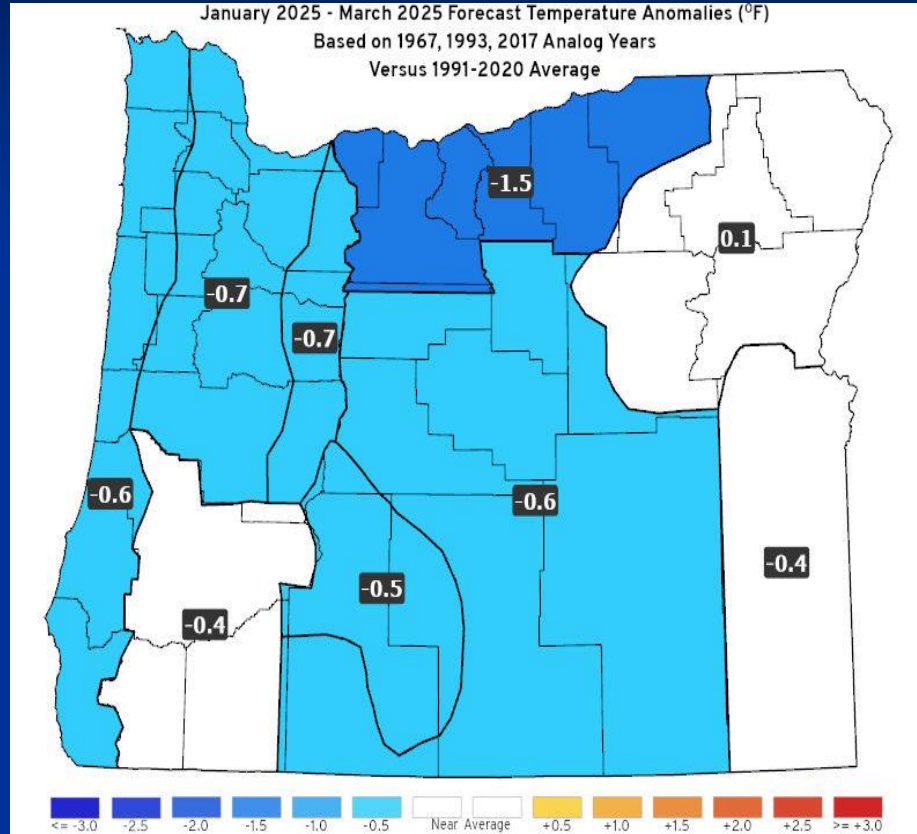
NCEP/NCAR Reanalysis
500mb Geopotential Height (m) Composite Anomaly 1991–2020 climo



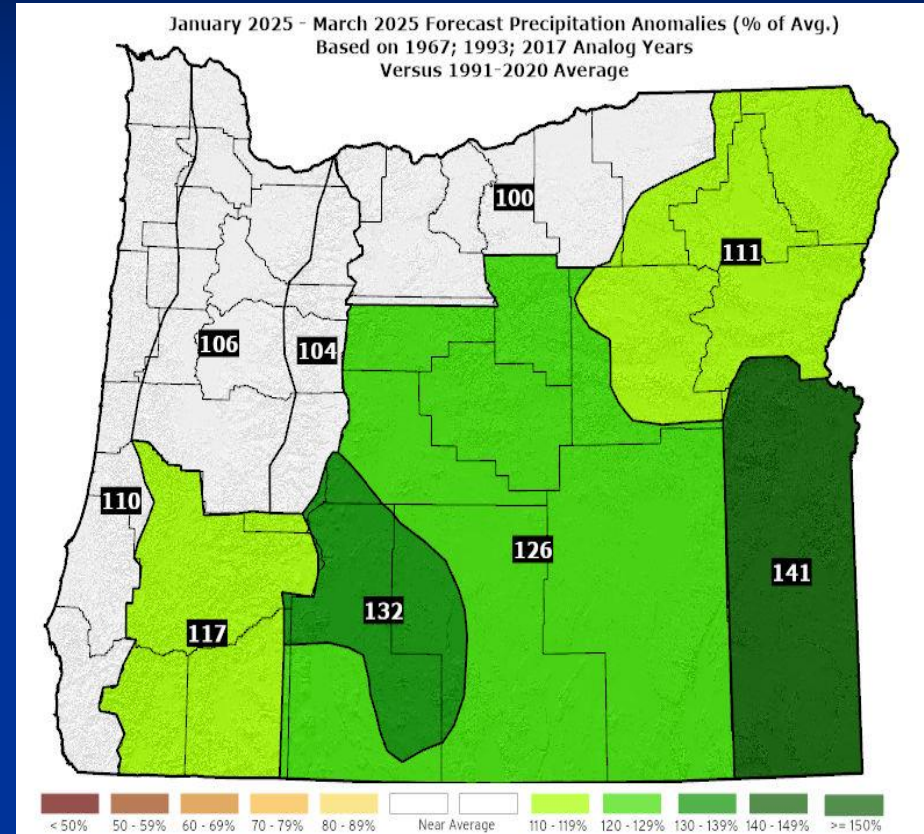
- Analogs all had some degree of anomalous troughing over the Pacific Northwest but with varying orientations.
- Forecast confidence is somewhat reduced due to a lack of consistency in upper-level patterns among the analogs.

January – March 2025 Forecast

Temperatures



Precipitation



- Volatile weather likely in January (mild/stormy or cold/snowy at times). Reduced confidence in the February and March forecasts.
- Near-to-above average precipitation with above-average snowfall in the mountains. Increased chances for lowland snow and coastal storms.

Forecast Highlights

- This forecast is based on weather that occurred during the (1967; 1993; 2017) analog years (unchanged from last month).
- Cold ENSO-neutral conditions are present and may transition to weak La Niña during this forecast period. 1967 and 1993 remained in ENSO-neutral, while 2017 transitioned into weak La Niña.
- Greater-than-average chances for stormy or cold/snowy periods in January, both in the mountains and the valleys, with above-average mountain snow.
- Forecast confidence drops in February and March, because the analog solutions increasingly diverge (forecast charts represent an analog blend).

Disclaimer: This forecast is not associated with NOAA's CPC (see "Forecasting Methods..." at: <https://oda.direct/Weather>) nor the official CPC "Three-Month Outlooks," which are available at: https://www.cpc.ncep.noaa.gov/products/predictions/long_range/seasonal.php?lead=1

Forecast Resources

- ODA Seasonal Climate Forecast Home:

<https://www.oregon.gov/oda/natural-resources/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>

A winter landscape with snow-covered trees and a cloudy sky. The trees are bare and covered in a thick layer of snow, with some evergreens visible in the background. The sky is a mix of light blue and white, suggesting a bright but overcast day. The ground is covered in a smooth layer of snow.

Updated Monthly

Your Feedback is Welcome!

Sign-up for Email Notification of Updates at:
<https://oda.fyi/SubscribeSCF>

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