

Seasonal Climate Forecast

March – May 2025

Issued: February 21, 2025

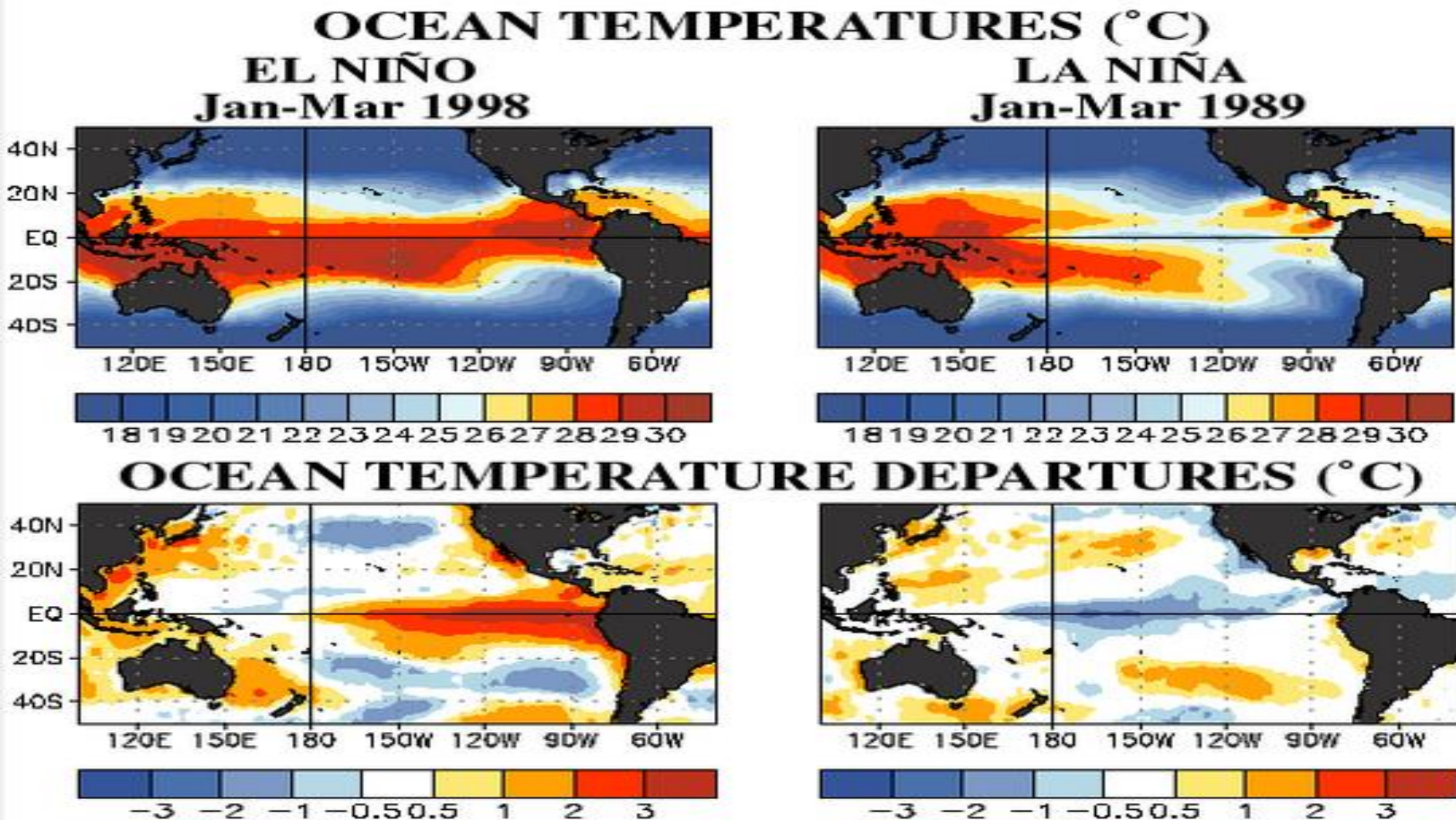
Contact: ODF Lead Meteorologist Pete Parsons
503-945-7448 or peter.gj.parsons@odf.oregon.gov

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

R Gress

El Niño vs La Niña

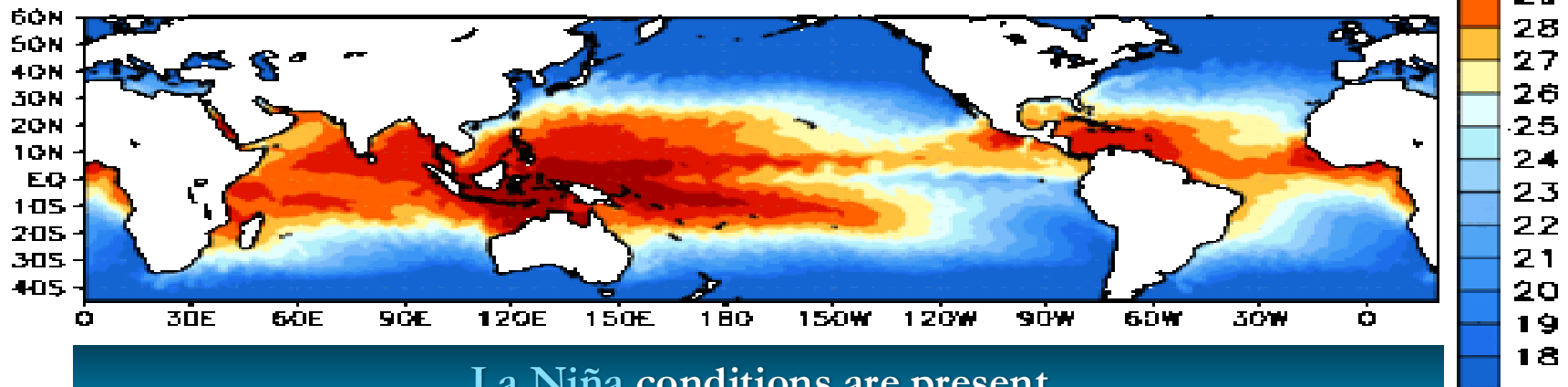
(SST Patterns in the Tropical Pacific Ocean)



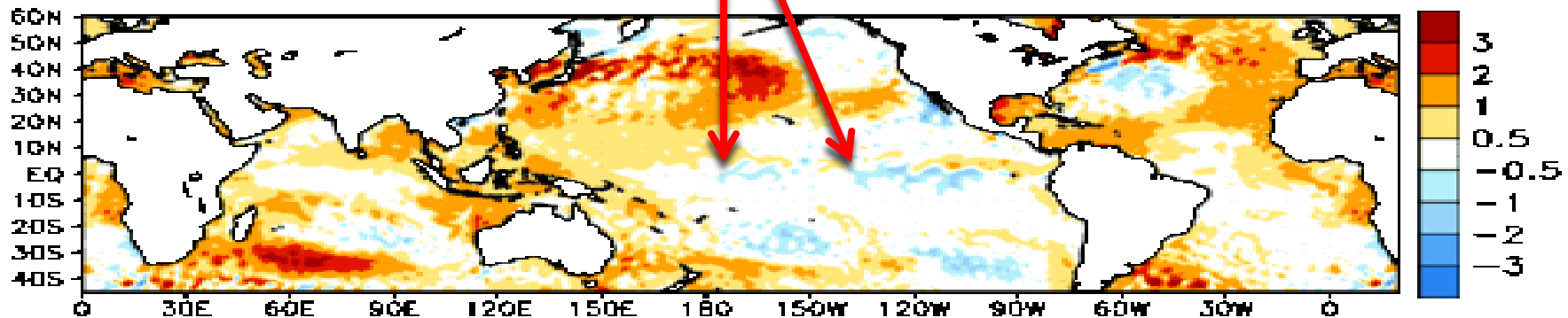
Sea Surface Temperatures (SSTs)

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

Week centered on 27 NOV 2024
SST (°C)



Anomalies (°C)



El Niño Southern Oscillation (ENSO)

Current Status and Forecast

- The January Southern Oscillation Index (SOI) of 0.2 reflected slightly stronger-than-average trade winds in the equatorial Pacific Ocean.
- The November 2024 – January 2025 Oceanic Niño Index (ONI) fell to -0.5°C , reflecting below average sea surface temperatures (“SSTs”) in the central equatorial Pacific Ocean (reaching the La Niña threshold).
- NOAA’s Climate Prediction Center (CPC) says that weak La Niña conditions should transition (warm) to ENSO-neutral during the March-May period.

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 (2024-2025)
(1966-1967; 2005-2006; 2016-2017)

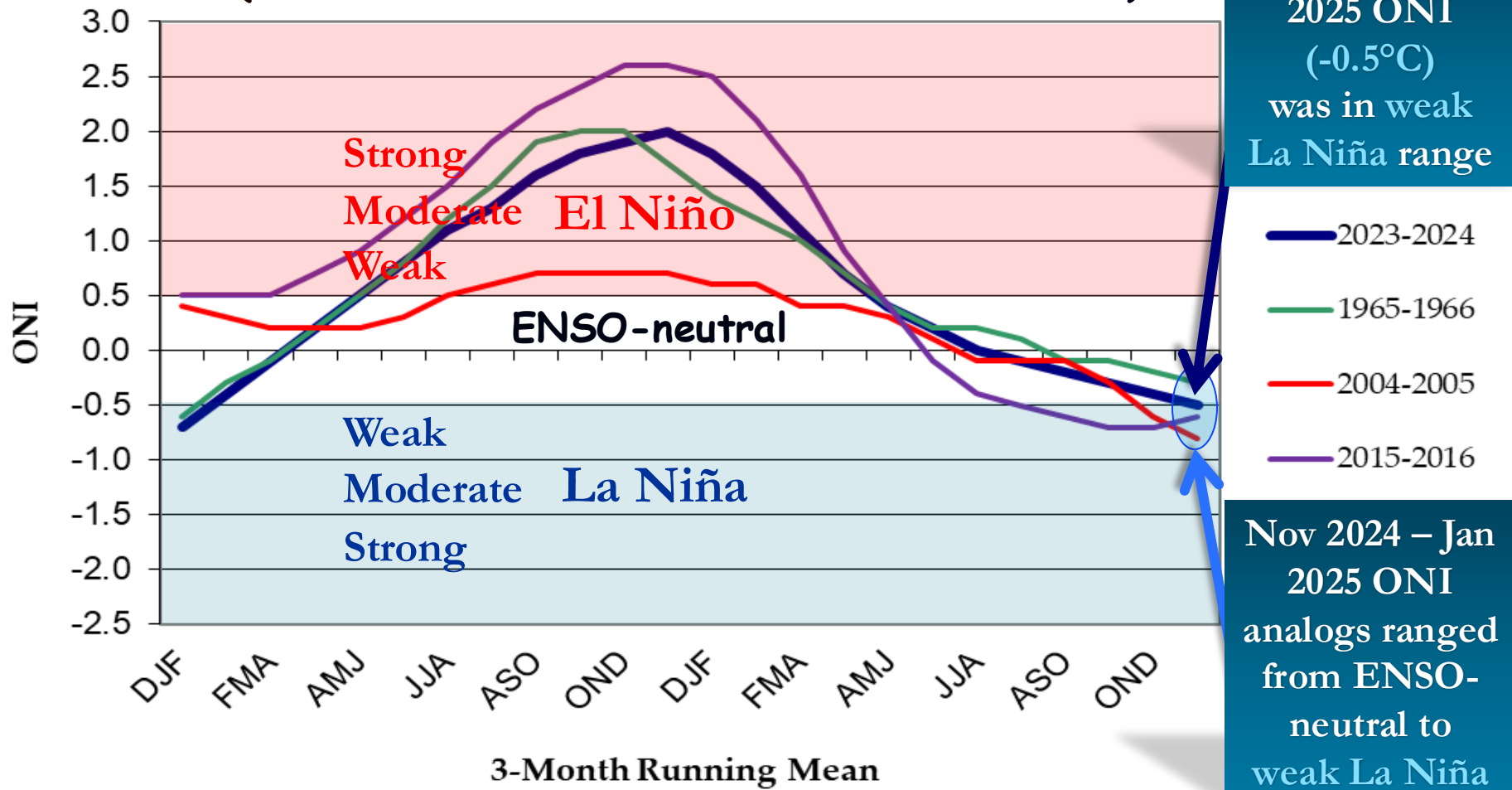


SOI data courtesy <https://www.cpc.ncep.noaa.gov/data/indices/soi>

Oceanic Niño Index (ONI)

ONI values from the top "analog years"
compared with the current period (2023-2024)

(1965-1966; 2004-2005; 2015-2016)

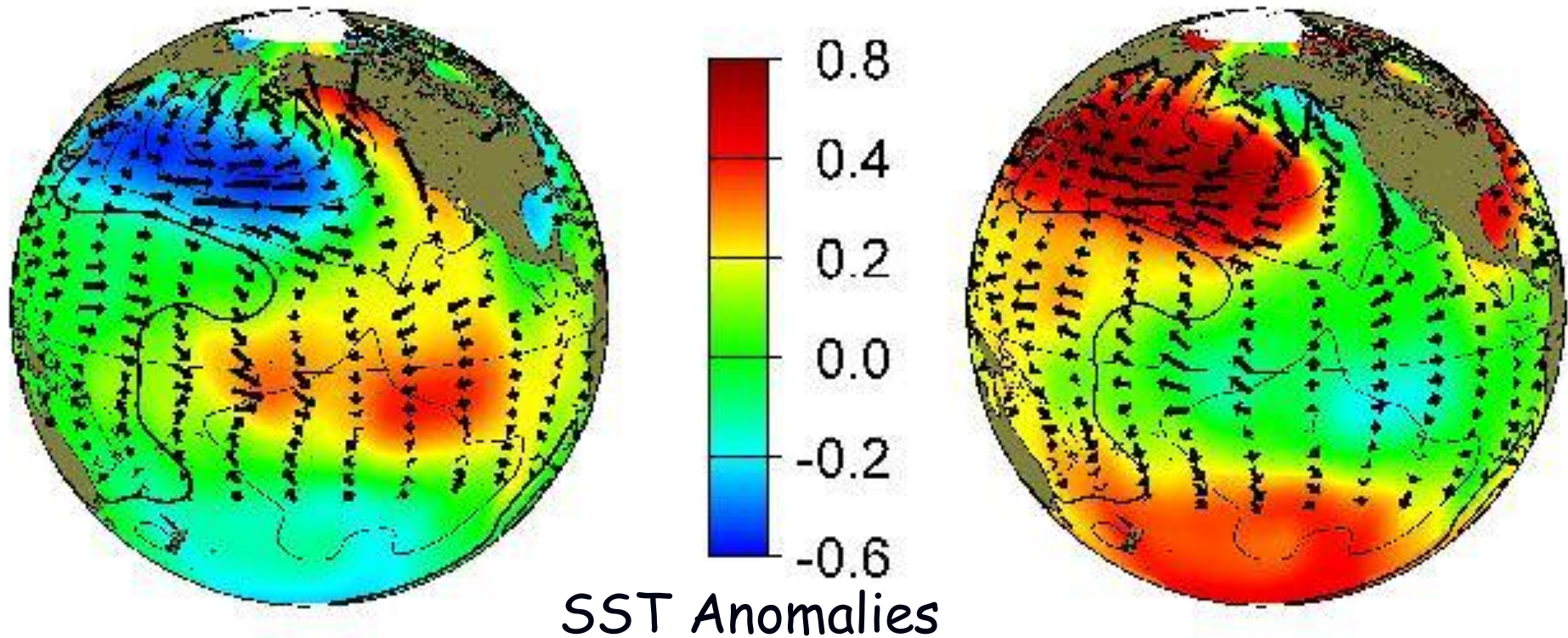


The Pacific Decadal Oscillation (PDO)

(Reflects SST “Phase” in the North Pacific Ocean)

Positive (Warm)
“Phase”

Negative (Cool)
“Phase”

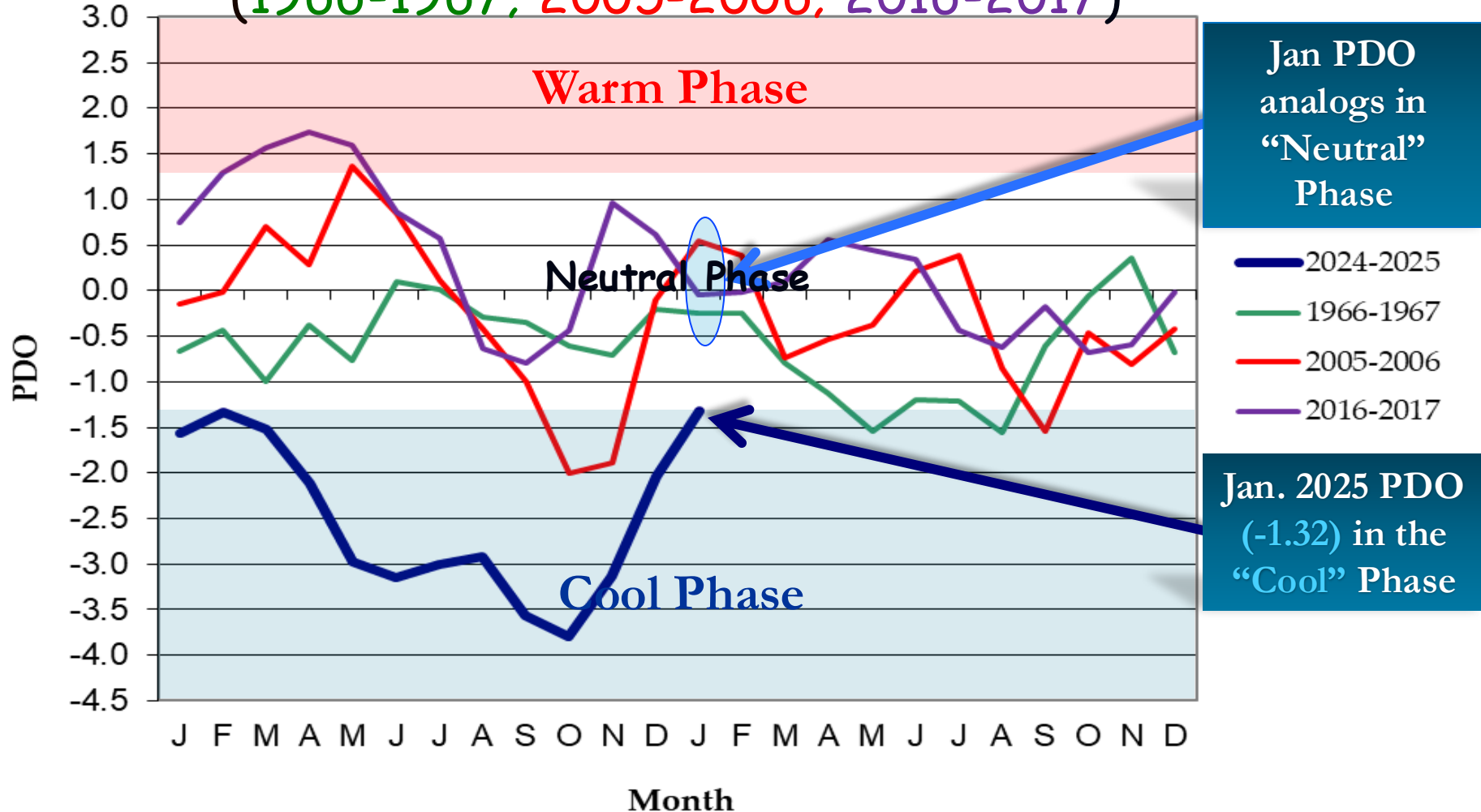


Courtesy: http://research.jisao.washington.edu/pdo/img/pdo_warm_cool.jpg

North Pacific Ocean

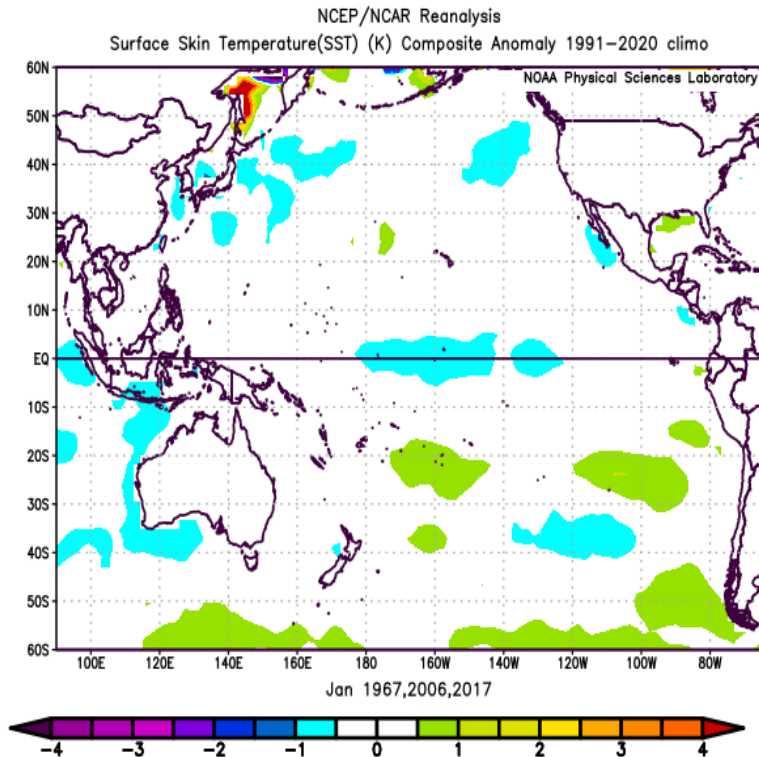
(Poleward of 20°N Latitude)

PDO values from the top "analog years" compared
with the current period (2024-2025)
(1966-1967; 2005-2006; 2016-2017)

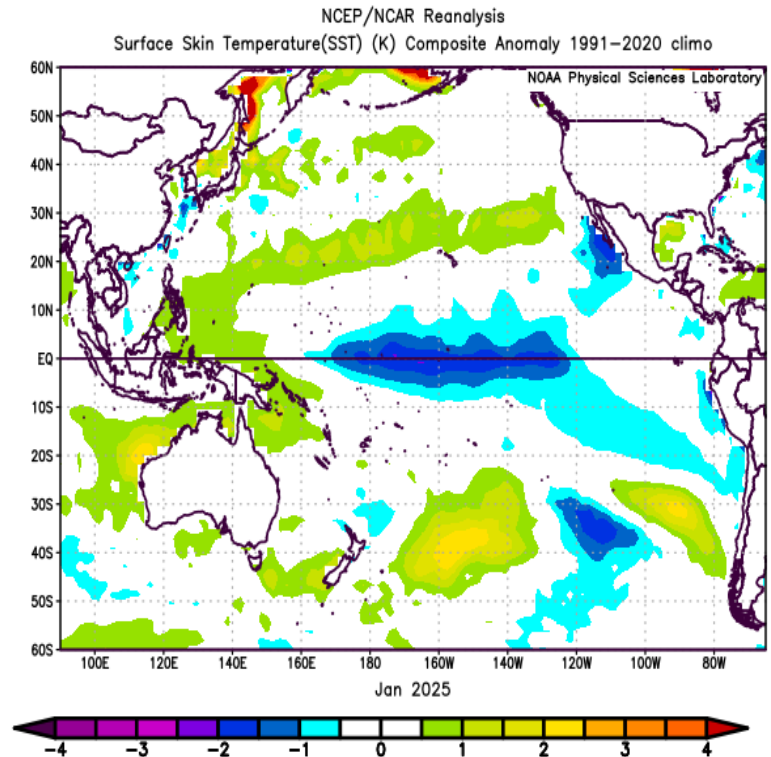


SST Anomalies Comparison

January Analogs

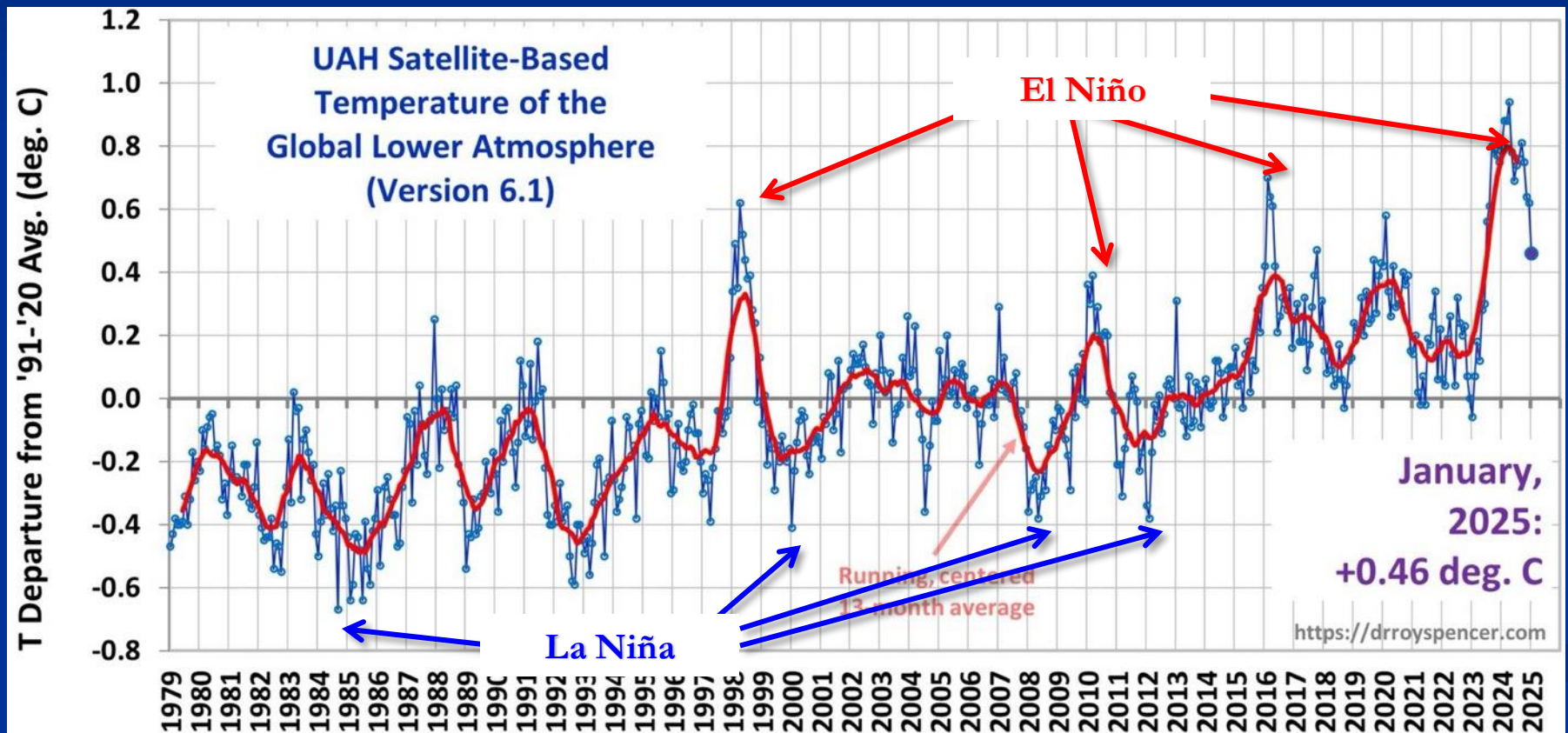


January 2025



- January analog tropical Pacific SST anomalies (left) reflected a blend of ENSO-neutral and La Niña conditions, while the January 2025 SST anomalies (right) reflected La Niña conditions.

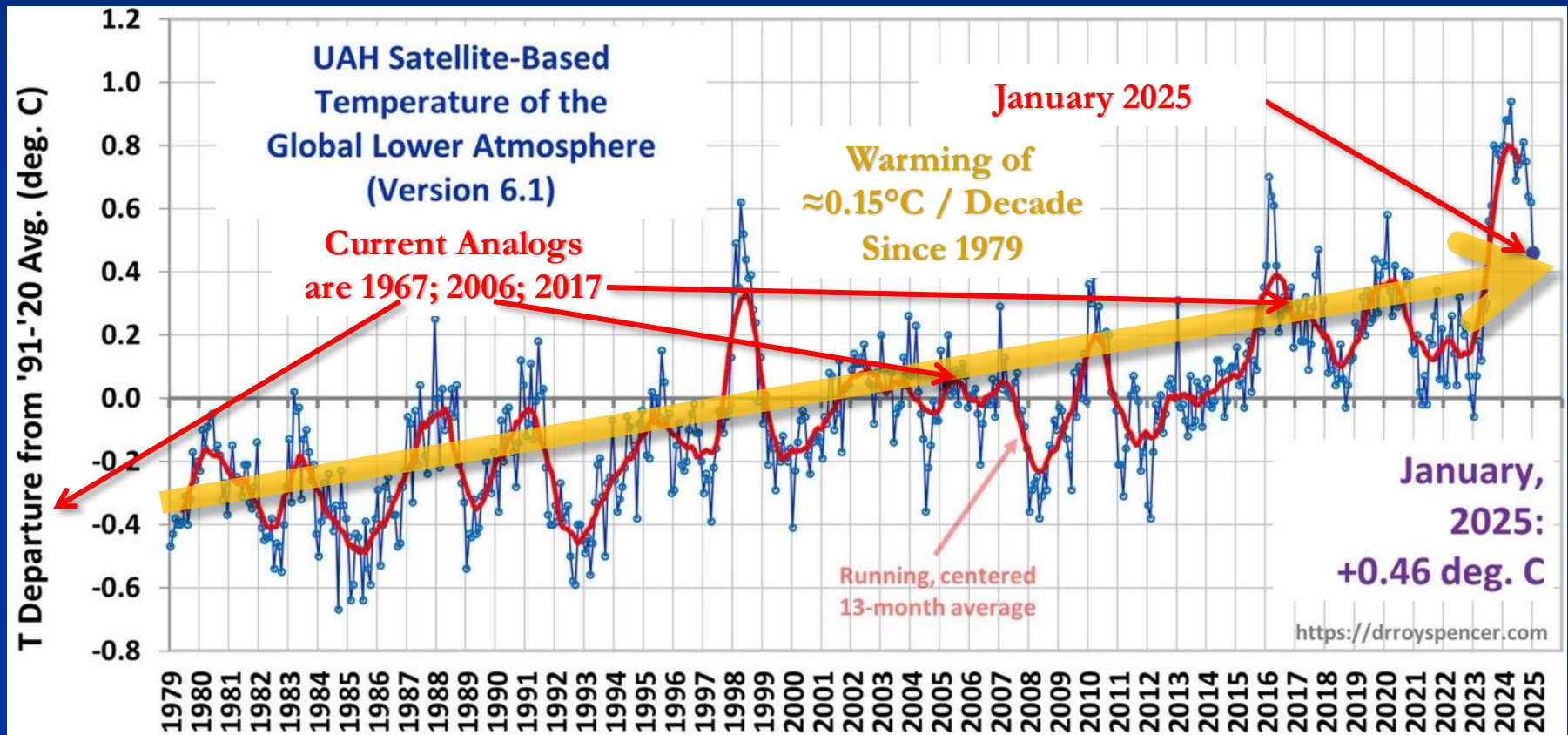
El Niño & La Niña Impact Global Temperatures...



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

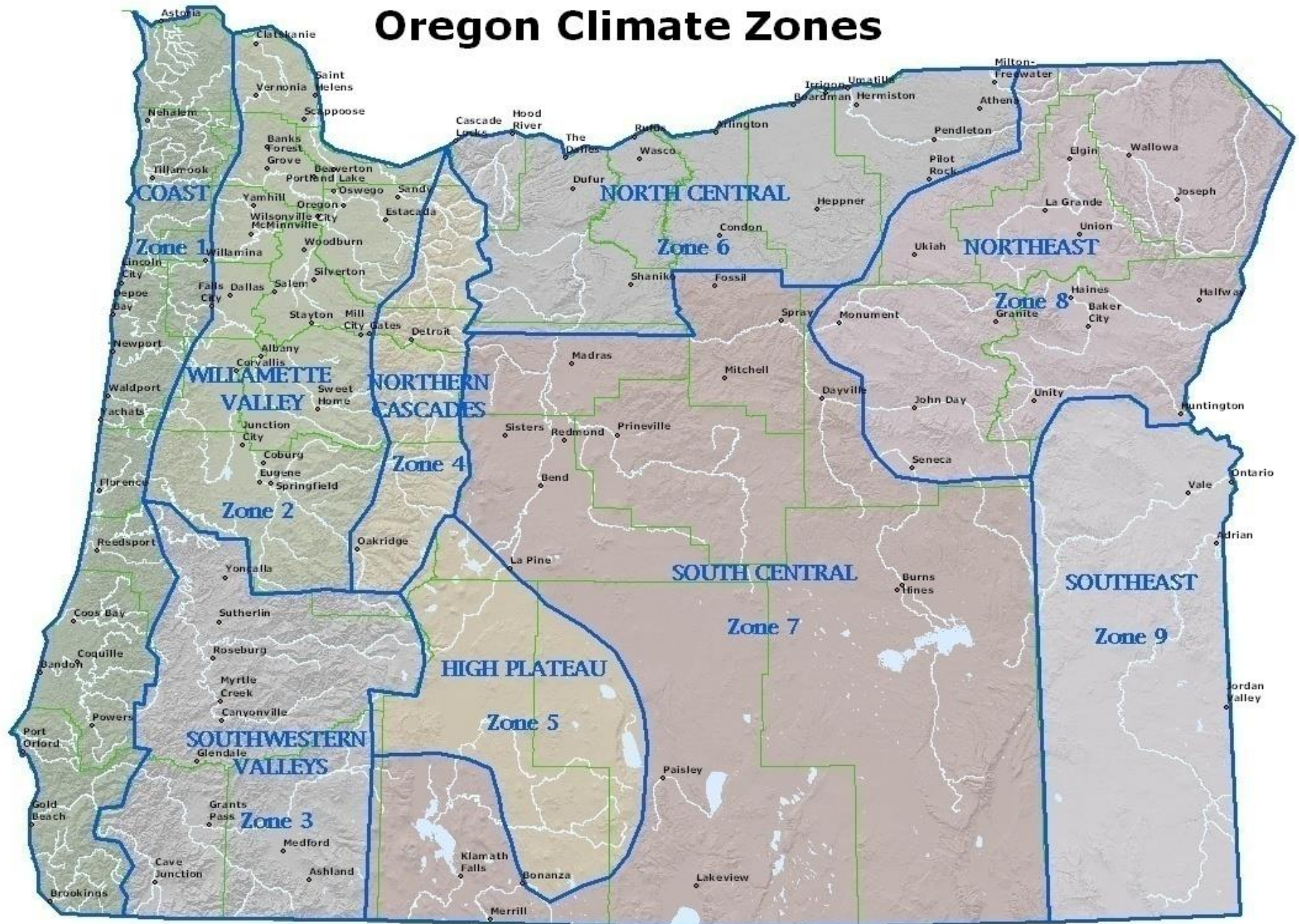
Global Temperature Trends

Increase Error in Analog Forecasts!



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

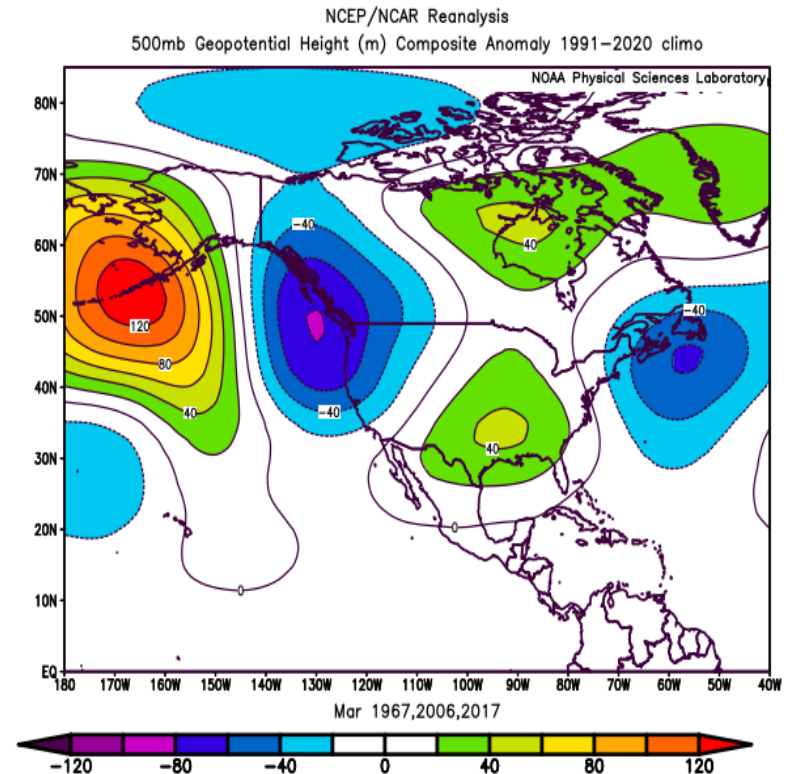
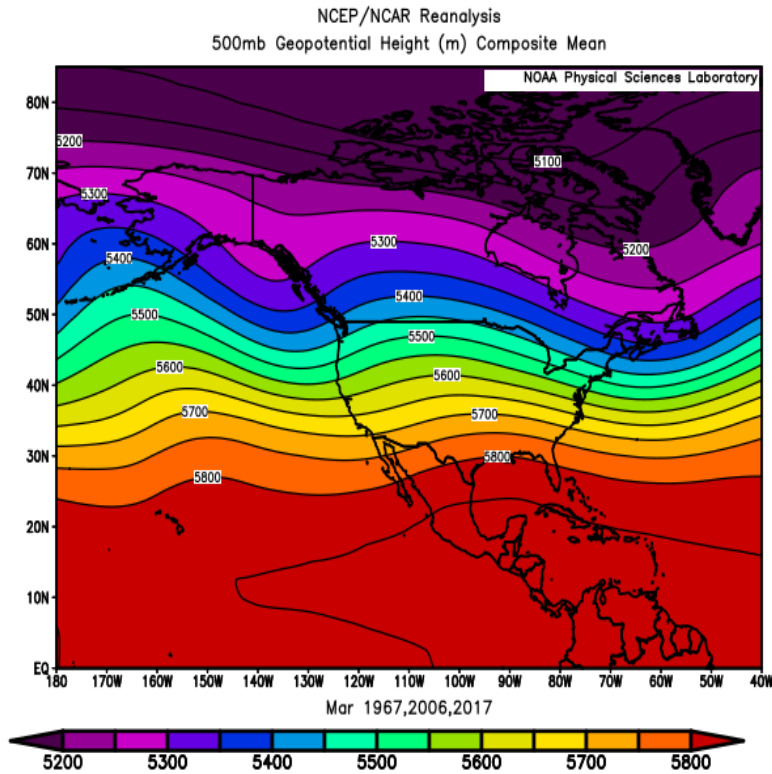
Oregon Climate Zones



March 2025 Forecast

Mean Upper-Air Pattern

Upper-Air Anomalies

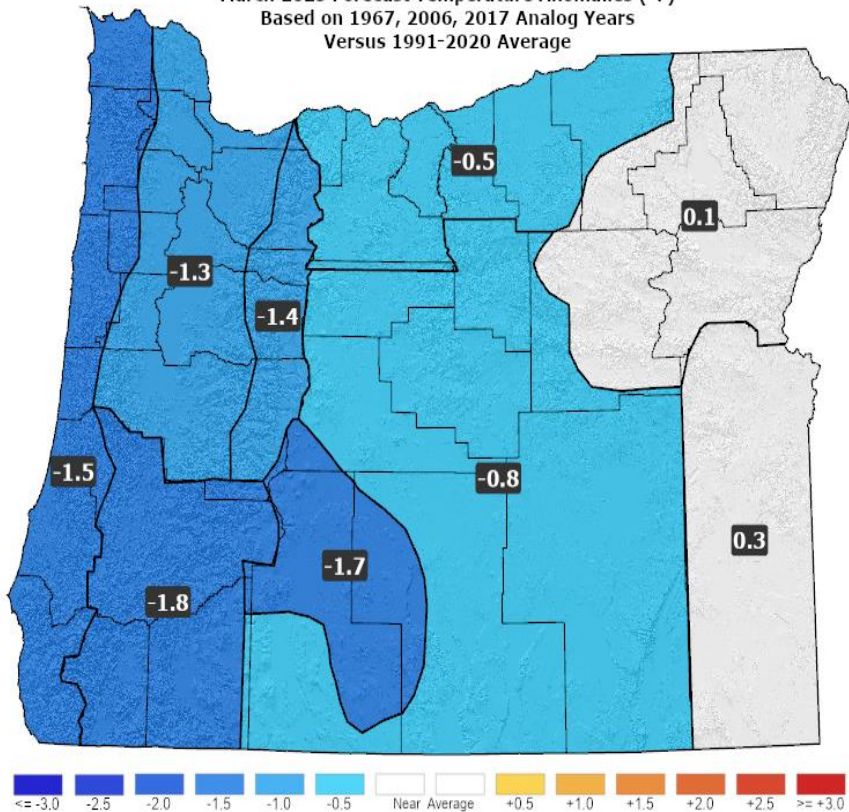


- 1967 & 2006 had anomalous troughing over Oregon, while 2017 had a wet SW flow aloft with near-average upper-air temperatures.
- The analog blend (above) puts anomalous troughing and prevailing SW flow aloft over Oregon with high potential for stormy weather.

March 2025 Forecast

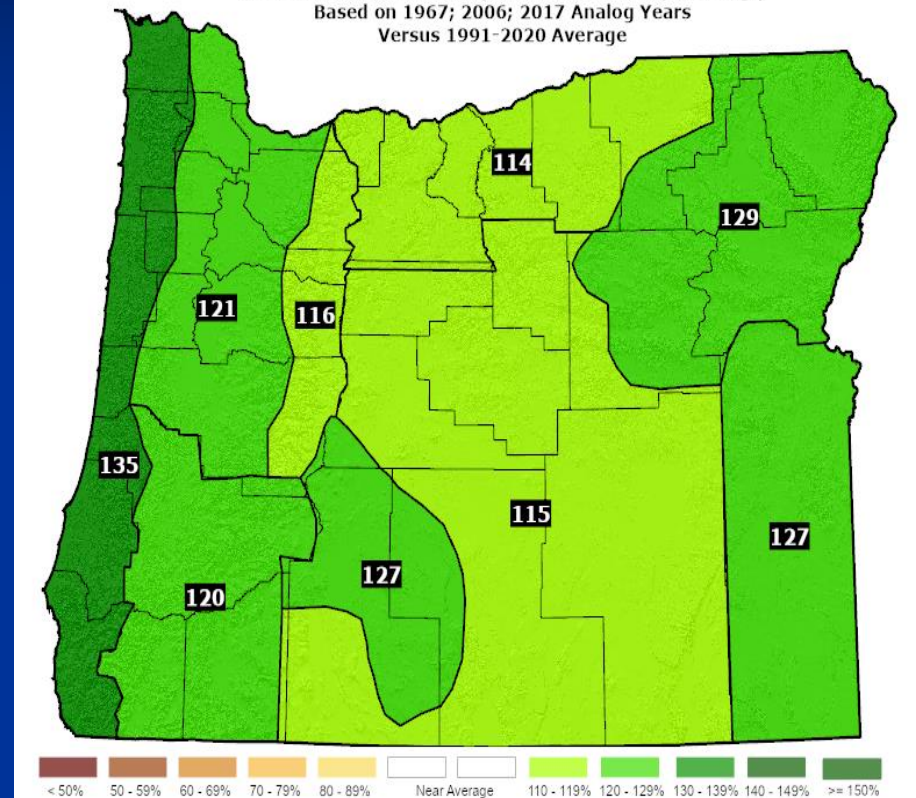
Temperatures

March 2025 Forecast Temperature Anomalies ($^{\circ}\text{F}$)
Based on 1967, 2006, 2017 Analog Years
Versus 1991-2020 Average



Precipitation

March 2025 Forecast Precipitation Anomalies (% of Avg.)
Based on 1967; 2006; 2017 Analog Years
Versus 1991-2020 Average

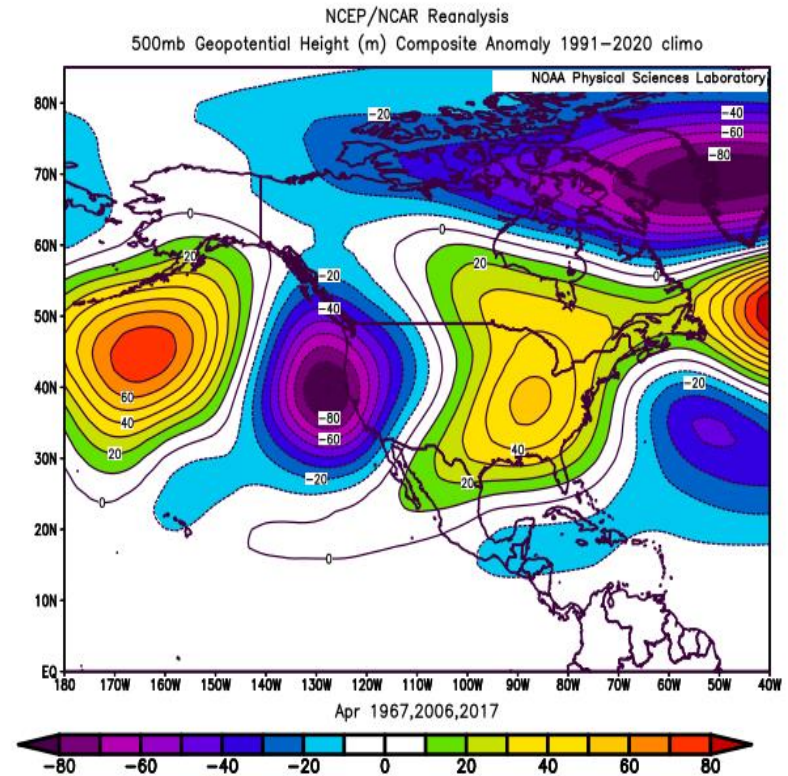
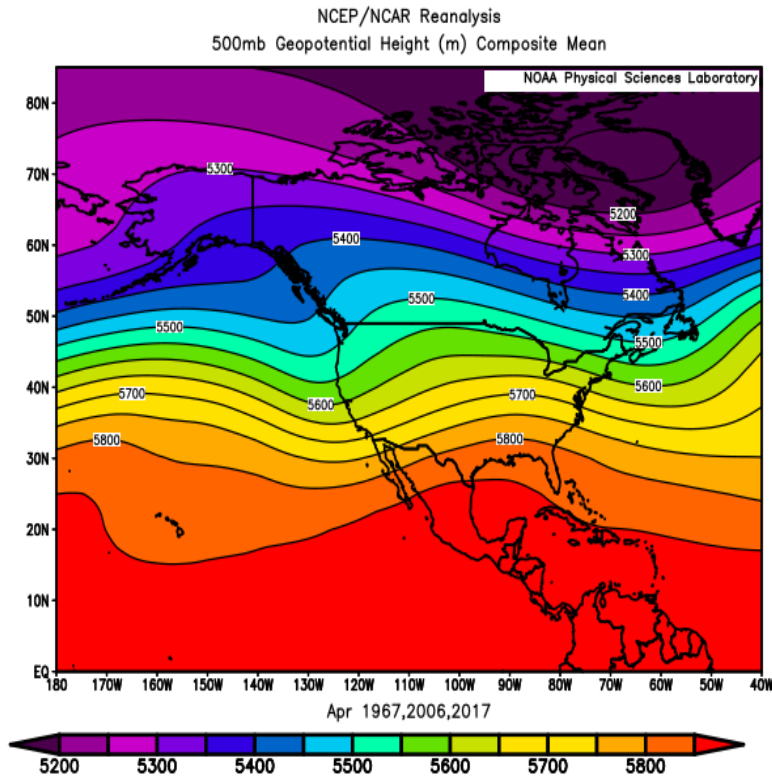


- Relatively cool conditions are favored with the potential for widespread periods with freezing minimum temperatures in the western valleys.
- Above-average storminess, precipitation, and mountain snowpacks likely. Very low snow levels likely at times.

April 2025 Forecast

Mean Upper-Air Pattern

Upper-Air Anomalies

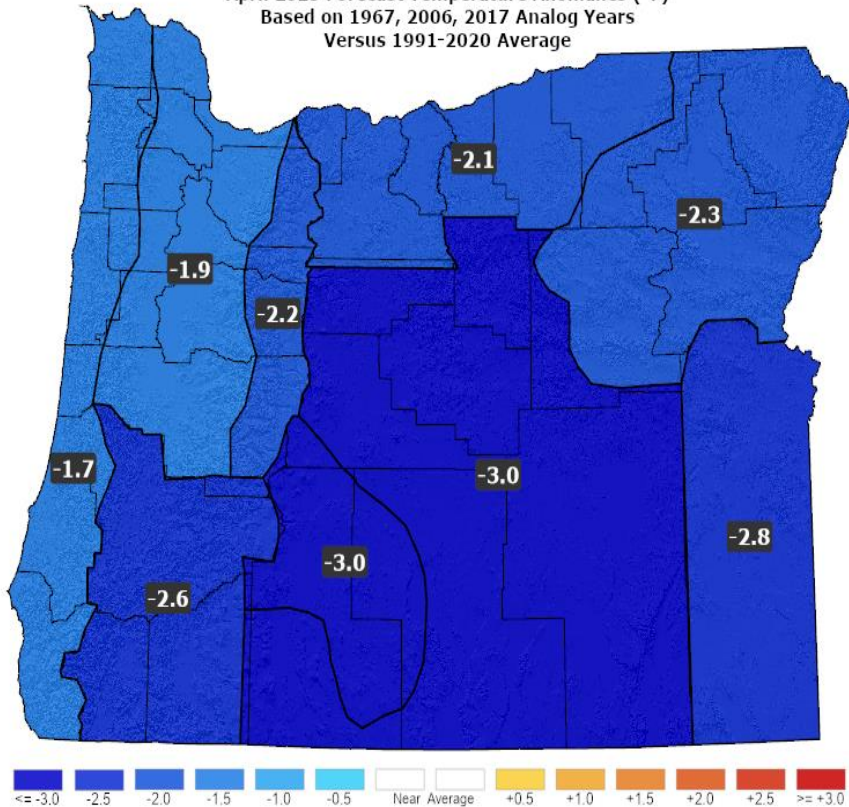


- More storminess than normal with anomalous troughing over the Pacific Northwest.
- Periods with snow on the mountain passes; central & eastern Oregon. Maintaining above-average mountain snowpacks.

April 2025 Forecast

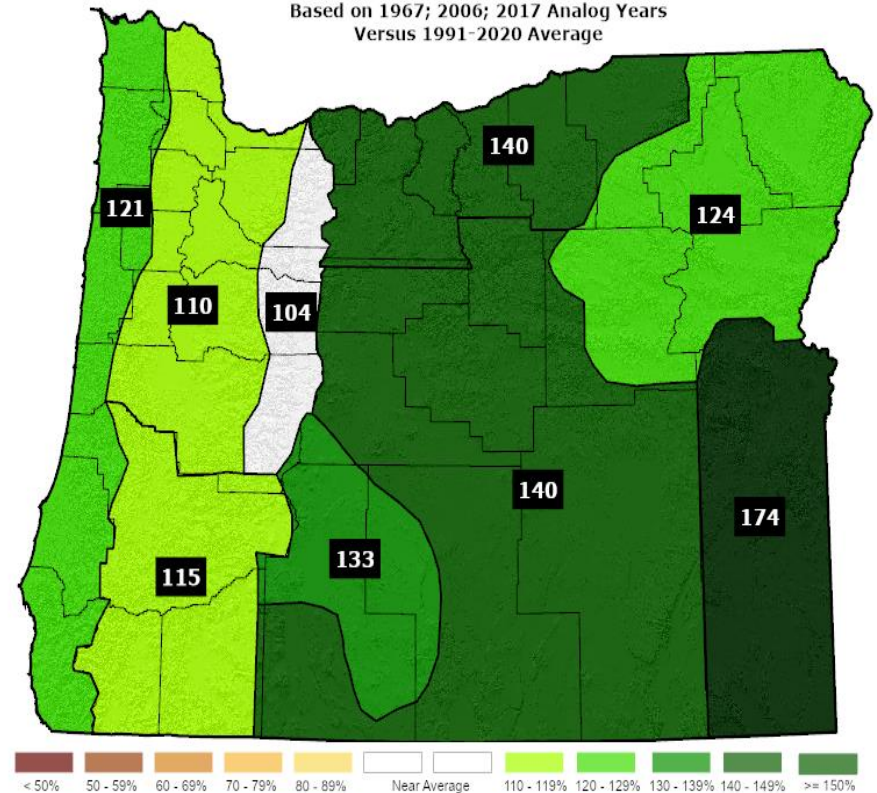
Temperatures

April 2025 Forecast Temperature Anomalies ($^{\circ}\text{F}$)
Based on 1967, 2006, 2017 Analog Years
Versus 1991-2020 Average



Precipitation

April 2025 Forecast Precipitation Anomalies (% of Avg.)
Based on 1967; 2006; 2017 Analog Years
Versus 1991-2020 Average



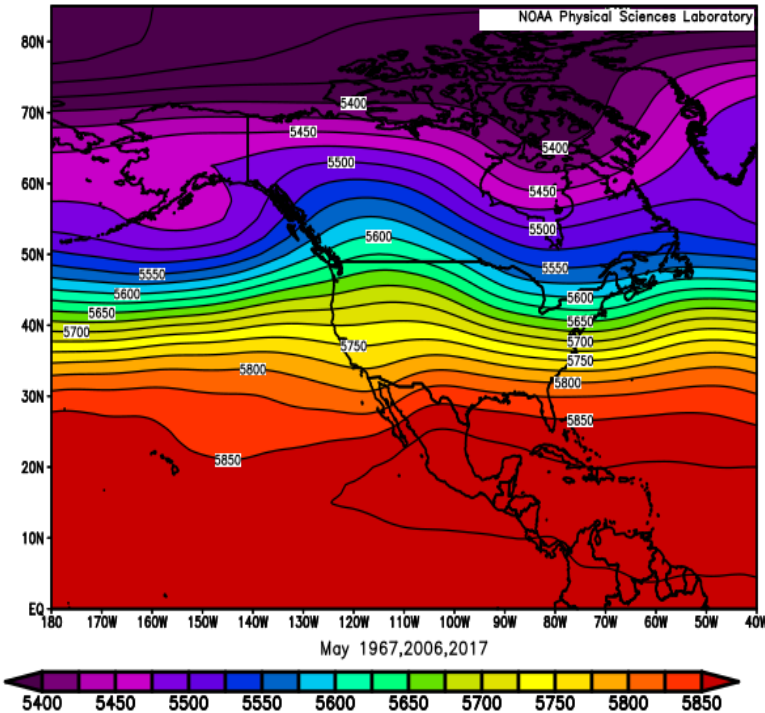
- Analogs were consistent on maintaining stormy/cool weather. Most days will have precipitation with low snow levels at times.
- Mountain snowpacks should peak at above or well-above average with excellent snow retention through the month.

May 2025 Forecast

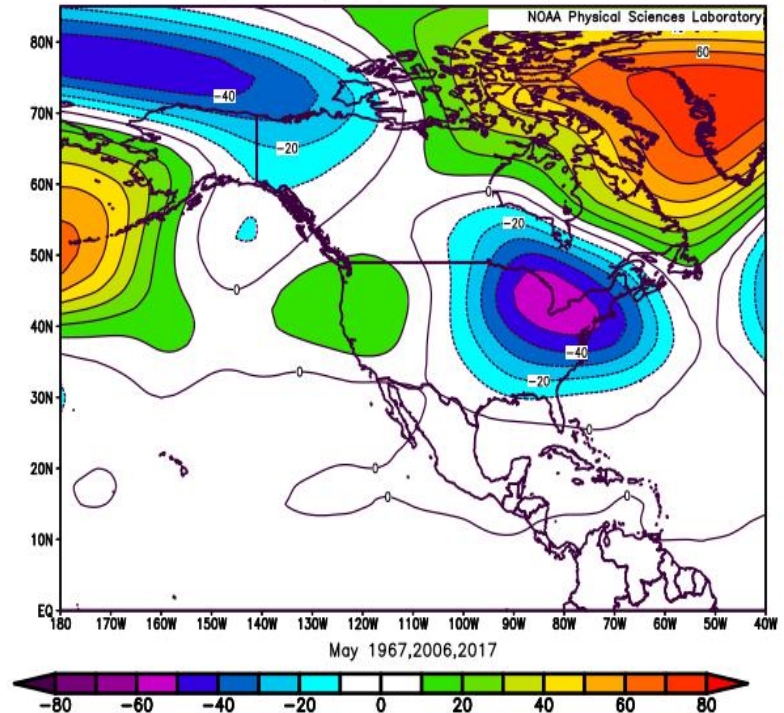
Mean Upper-Air Pattern

Upper-Air Anomalies

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



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

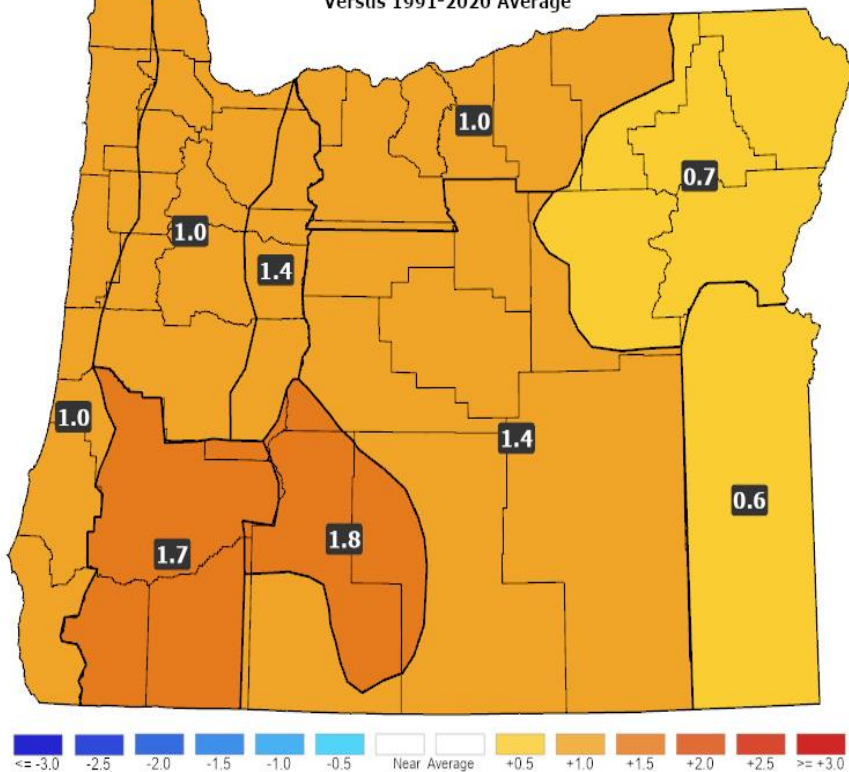


- Analogs are consistent in showing a marked switch to average or above-average ridging over the Pacific Northwest.
- A blend of the analog years (shown above) favors a transition to more tranquil weather with dry and warm periods likely.

May 2025 Forecast

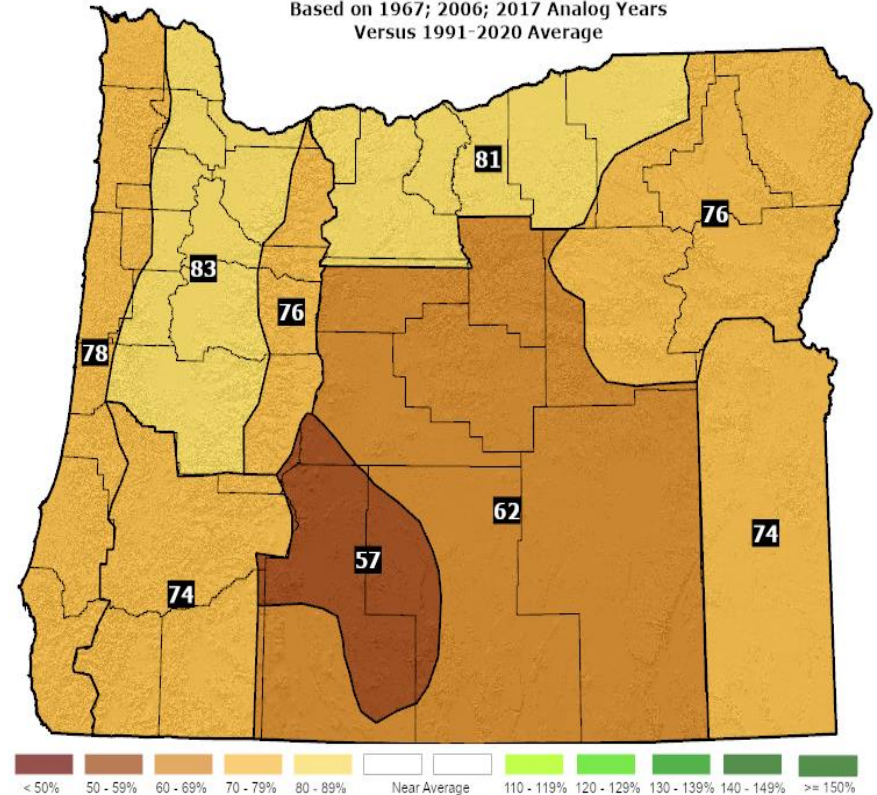
Temperatures

May 2025 Forecast Temperature Anomalies (°F)
Based on 1967, 2006, 2017 Analog Years
Versus 1991-2020 Average



Precipitation

May 2025 Forecast Precipitation Anomalies (% of Avg.)
Based on 1967; 2006; 2017 Analog Years
Versus 1991-2020 Average

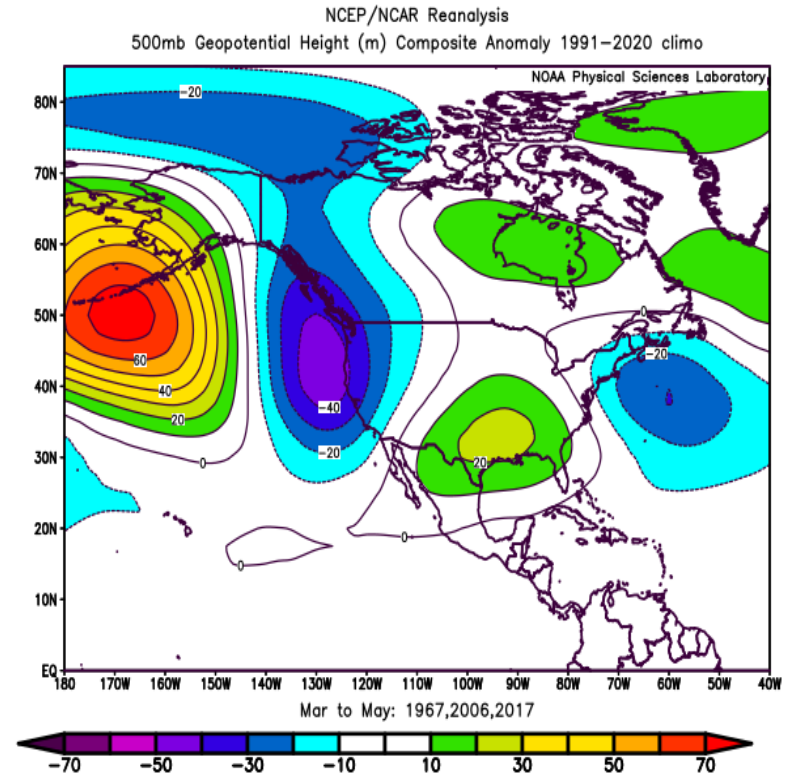
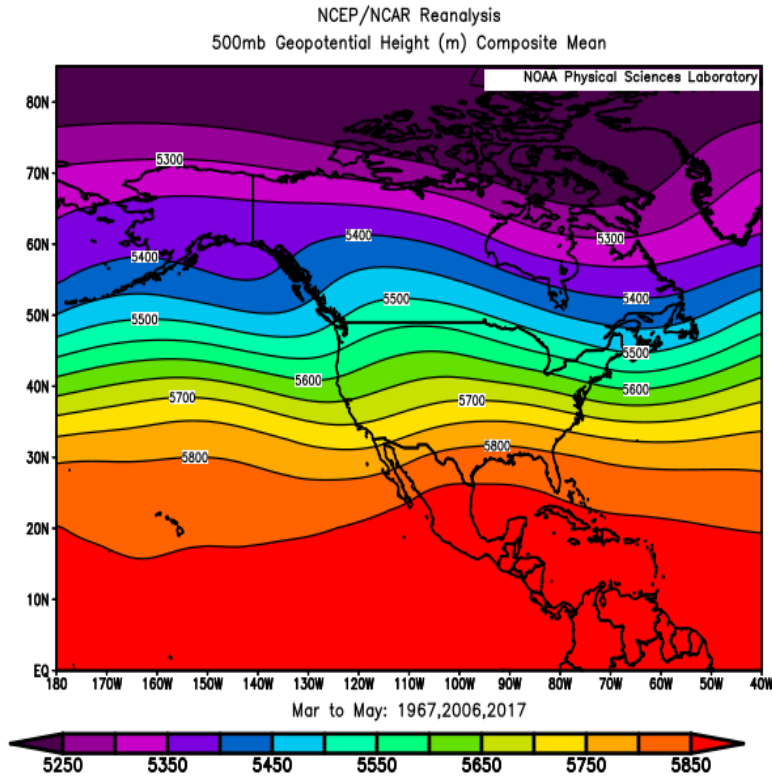


- Confidence is high for a transition to above-average temperatures, which would be in stark contrast to the preceding April.
- Despite below-average precipitation, mountain snowpacks should remain above average at the highest elevations (i.e., Crater Lake).

March – May 2025 Forecast

Mean Upper-Air Pattern

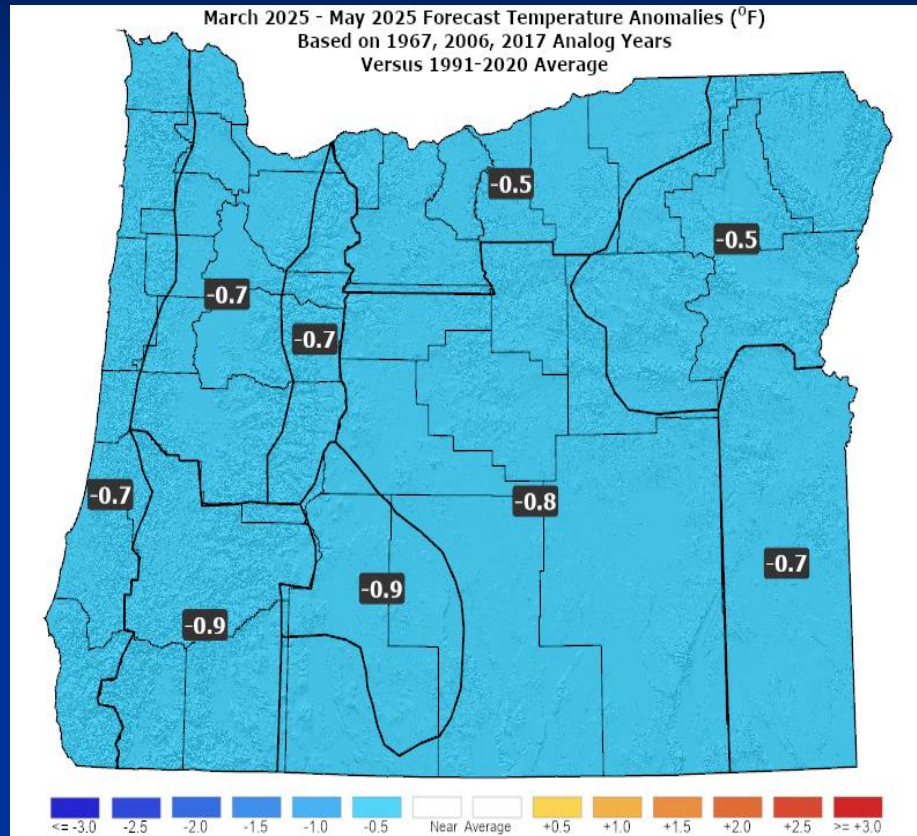
Upper-Air Anomalies



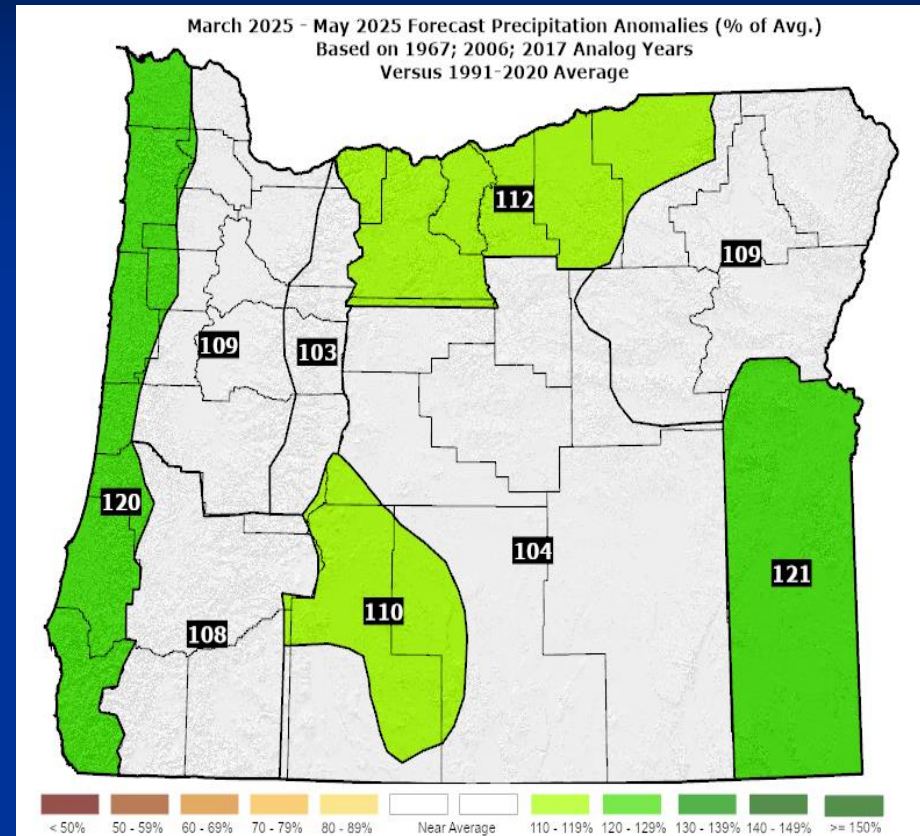
- La Niña is expected to transition to ENSO-neutral during this period.
- Expect anomalous upper-level troughing over the Pacific Northwest in March & April, with a marked transition to weak anomalous upper-level ridging in May.

March – May 2025 Forecast

Temperatures



Precipitation



- Cool temperatures in March and April will be in start contrast with a relatively warm May...likely bringing an abrupt weather change!
- Above-average precipitation and mountain snowfall should help snowpacks peak at above average.

Forecast Highlights

- This forecast is based on weather that occurred during the (1967; 2006; 2017) analog years (2017 replaced 1993 this month).
- La Niña conditions are present and should transition to ENSO-neutral during this forecast period.
- Expect below-normal temperatures and above-normal precipitation and mountain snow in March and April. Mountain snowpacks should peak at above or well-above average.
- In stark contrast...May looks relatively warm and dry, which should quickly clear mountain snow at lower elevations. Expect dry stretches with 80°F+ temperatures in the valleys (a welcome sight for most).

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>



Updated Monthly

Your Feedback is Welcome!

Sign-up for Email Notification of Updates at:

https://public.govdelivery.com/accounts/ORODA/subscriber/new?topic_id=ORODA_14

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