

# ENSO: Recent Evolution, Current Status and Predictions



Update prepared by:  
Climate Prediction Center / NCEP  
22 December 2025

# Outline

Summary

Recent Evolution and Current Conditions

Oceanic Niño Index (ONI)

Pacific SST Outlook

U.S. Seasonal Precipitation and Temperature Outlooks

Summary

# Summary

## ENSO Alert System Status: **La Niña Advisory**

La Niña is present.\*

Equatorial sea surface temperatures (SSTs) are below average across the east-central and eastern Pacific Ocean.

Atmospheric anomalies over the tropical Pacific Ocean are consistent with La Niña.

La Niña is favored to continue for the next month or two, with a transition to ENSO-neutral most likely in January-March 2026 (68% chance).\*

\* Note: These statements are updated once a month (2<sup>nd</sup> Thursday of each month) in association with the ENSO Diagnostics Discussion, which can be found by clicking [here](#).

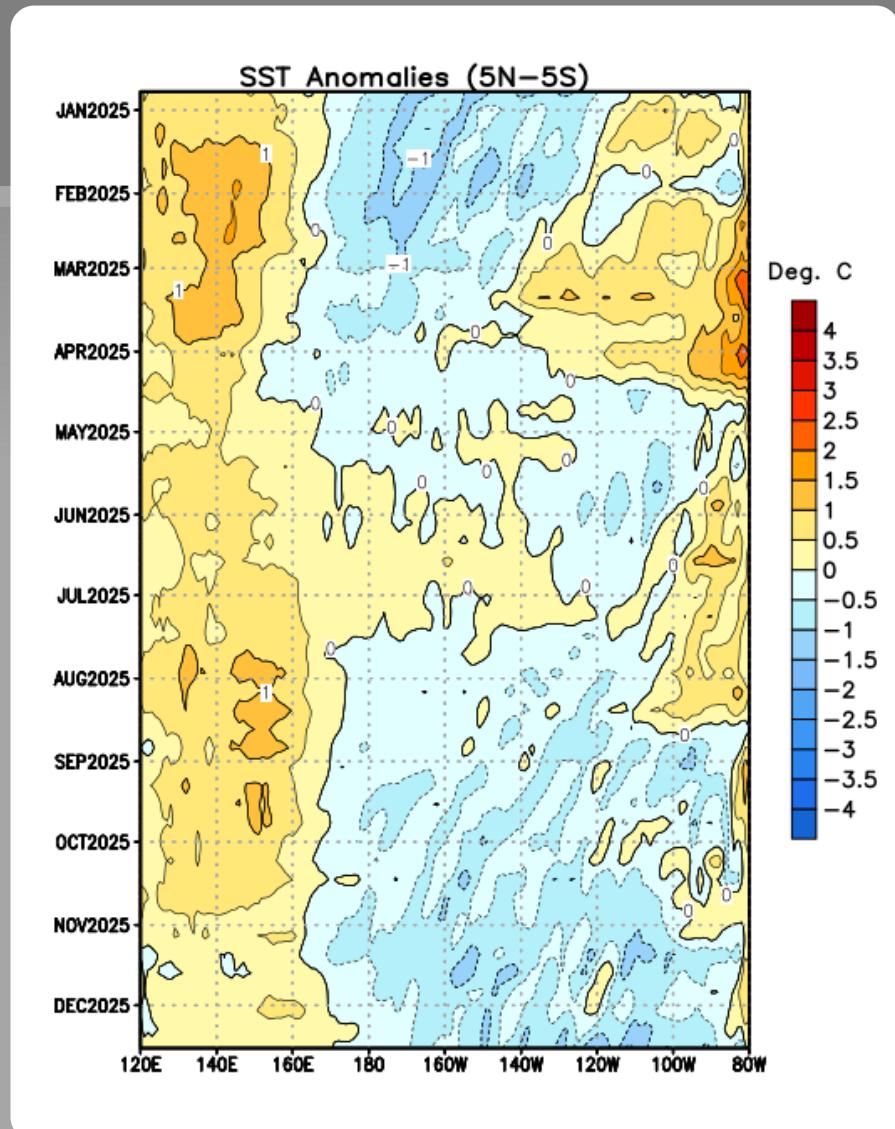
# Recent Evolution of Equatorial Pacific SST Departures (°C)

Through February 2025, below-average SSTs persisted in the east-central and central Pacific.

From April through August 2025, SSTs were near average across most of the equatorial Pacific Ocean.

In August 2025, equatorial SST anomalies decreased across the central and east-central Pacific.

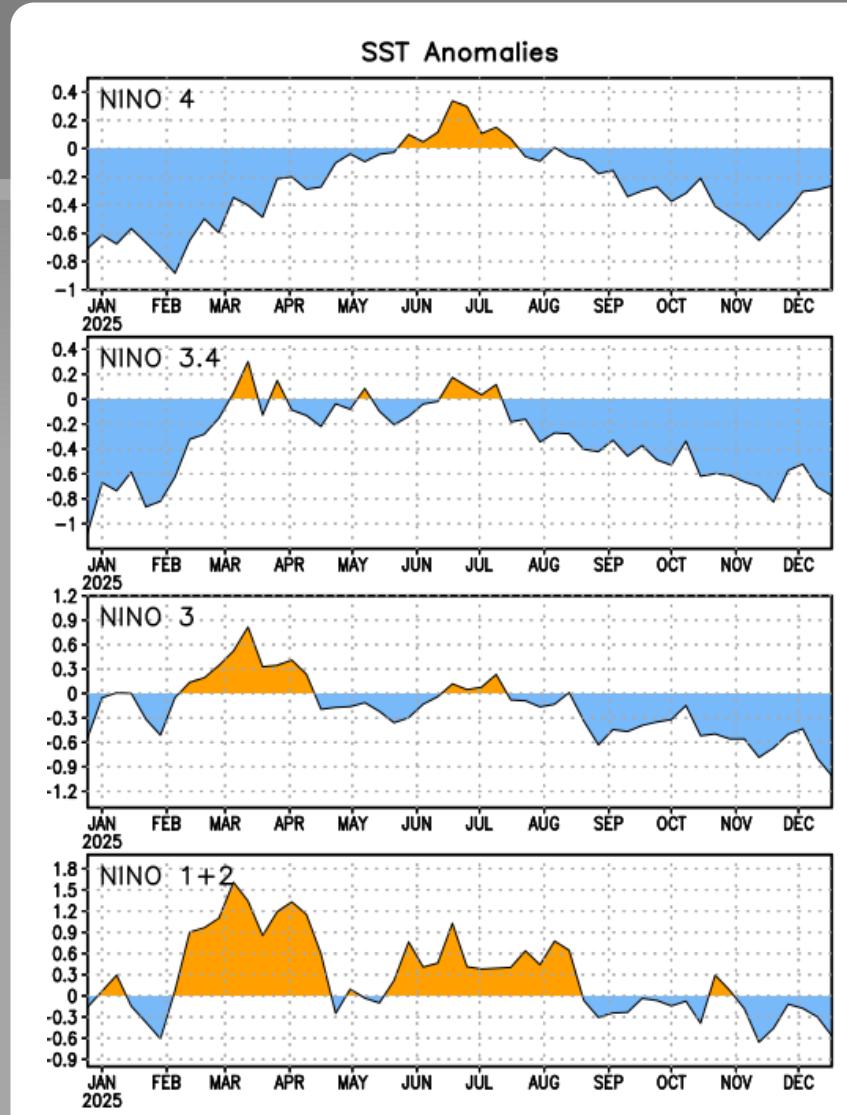
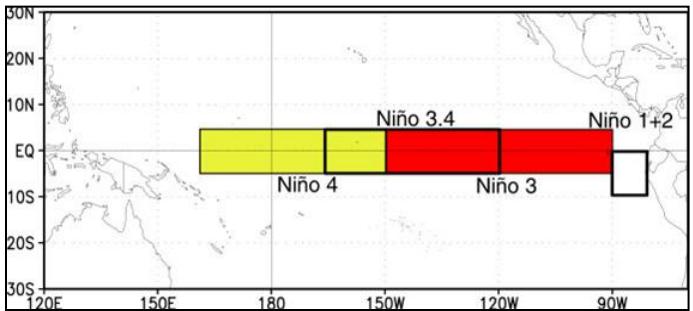
Below-average SSTs persisted across most of the equatorial Pacific since September 2025.



# Niño Region SST Departures (°C) Recent Evolution

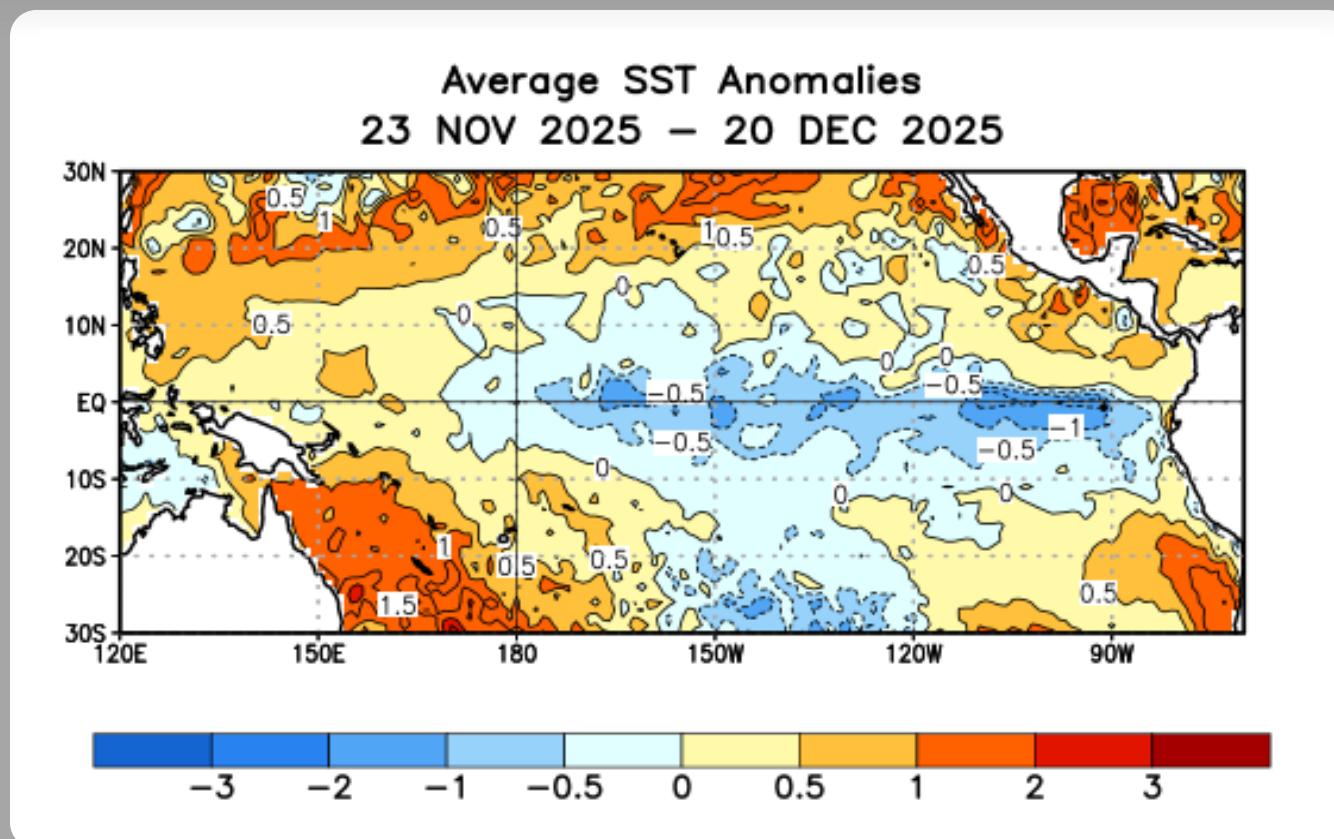
The latest weekly  
SST departures are:

Niño 4	-0.3°C
Niño 3.4	-0.8°C
Niño 3	-1.0°C
Niño 1+2	-0.6°C



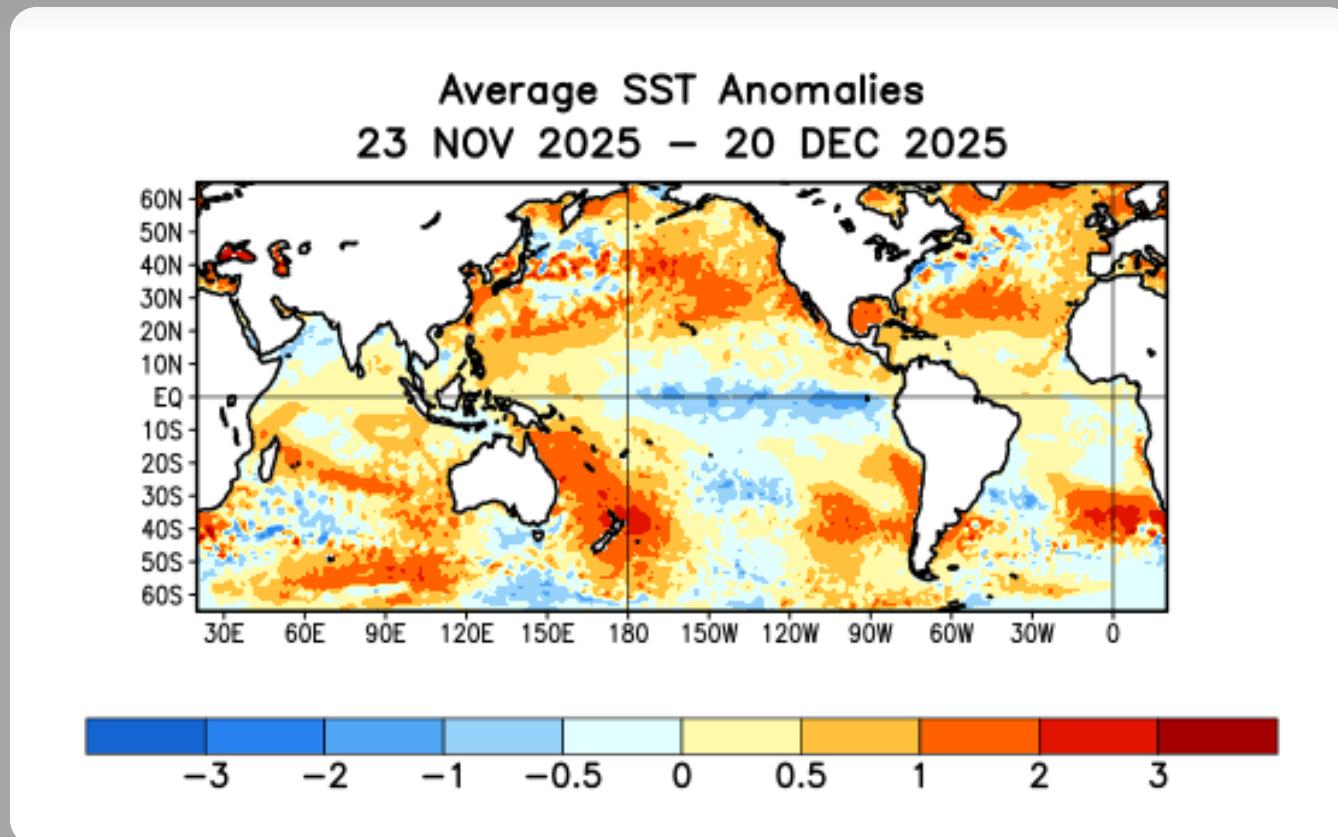
# SST Departures ( $^{\circ}\text{C}$ ) in the Tropical Pacific During the Last Four Weeks

In the last four weeks, equatorial SSTs were below average across the east-central and eastern Pacific.



# Global SST Departures (°C) During the Last Four Weeks

During the last four weeks, equatorial SSTs were below average in the east-central and eastern Pacific Ocean. The rest of the equatorial oceans are near average.

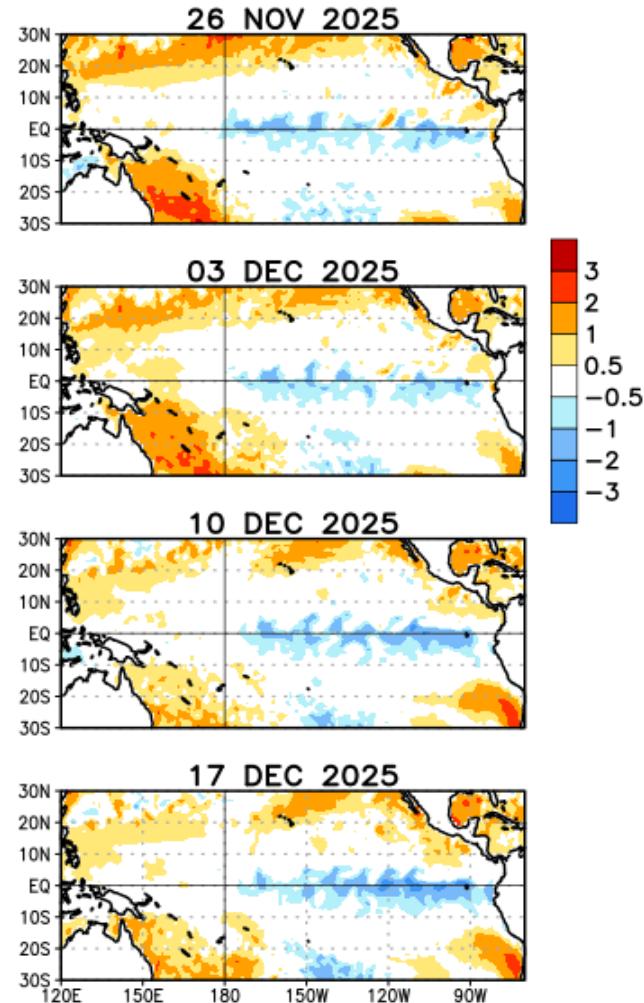


# Weekly SST Departures during the Last Four Weeks

During the last 4 weeks, below average SSTs were present in the east-central and eastern equatorial Pacific Ocean.

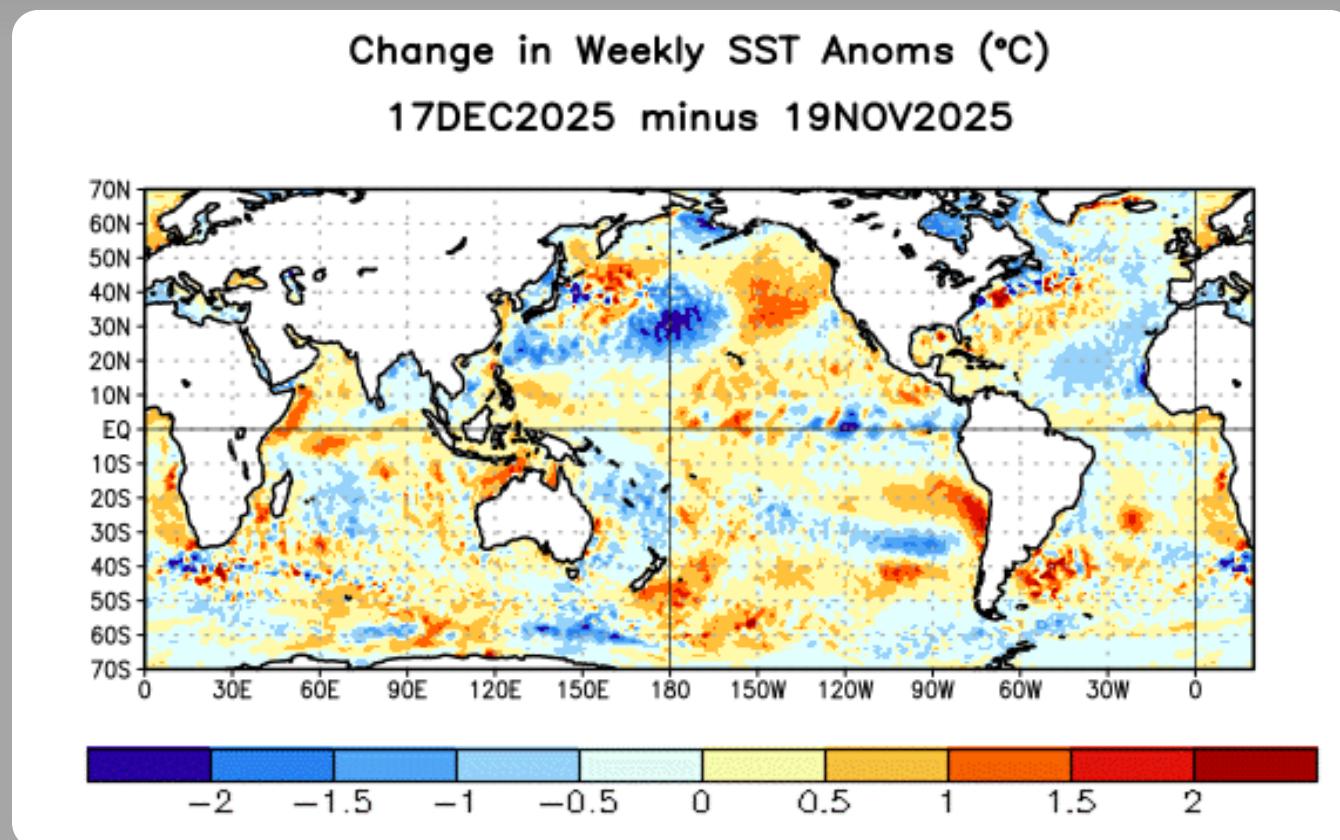
Negative SST anomalies in the eastern equatorial Pacific strengthened in the past week.

Weekly SST Anomalies (DEG C)



# Change in Weekly SST Departures over the Last Four Weeks

During the last four weeks, positive SST anomaly changes were observed in the central equatorial Pacific Ocean, while negative changes were observed in the eastern equatorial Pacific Ocean.



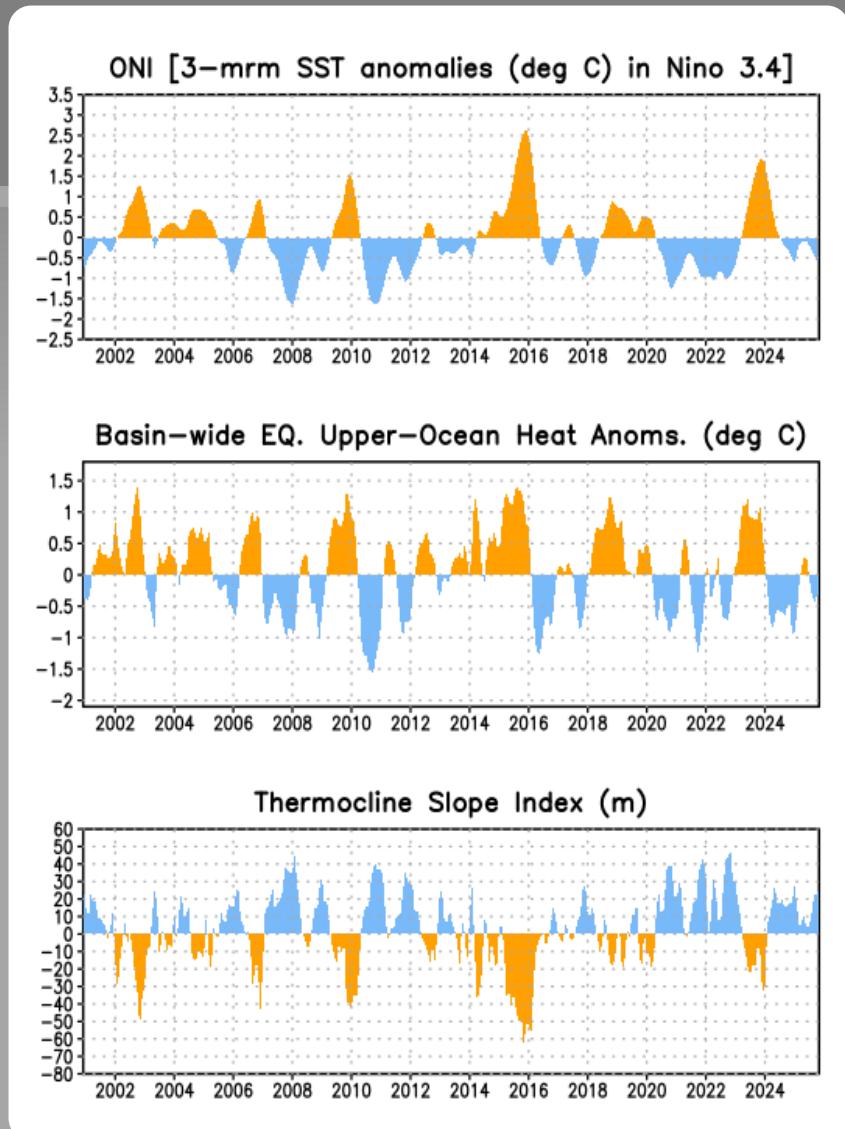
# Upper-Ocean Conditions in the Equatorial Pacific

The basin-wide equatorial upper ocean (0-300 m) heat content is greatest prior to and during the early stages of a Pacific warm (El Niño) episode (compare top 2 panels), and least prior to and during the early stages of a cold (La Niña) episode.

The slope of the oceanic thermocline is least (greatest) during warm (cold) episodes.

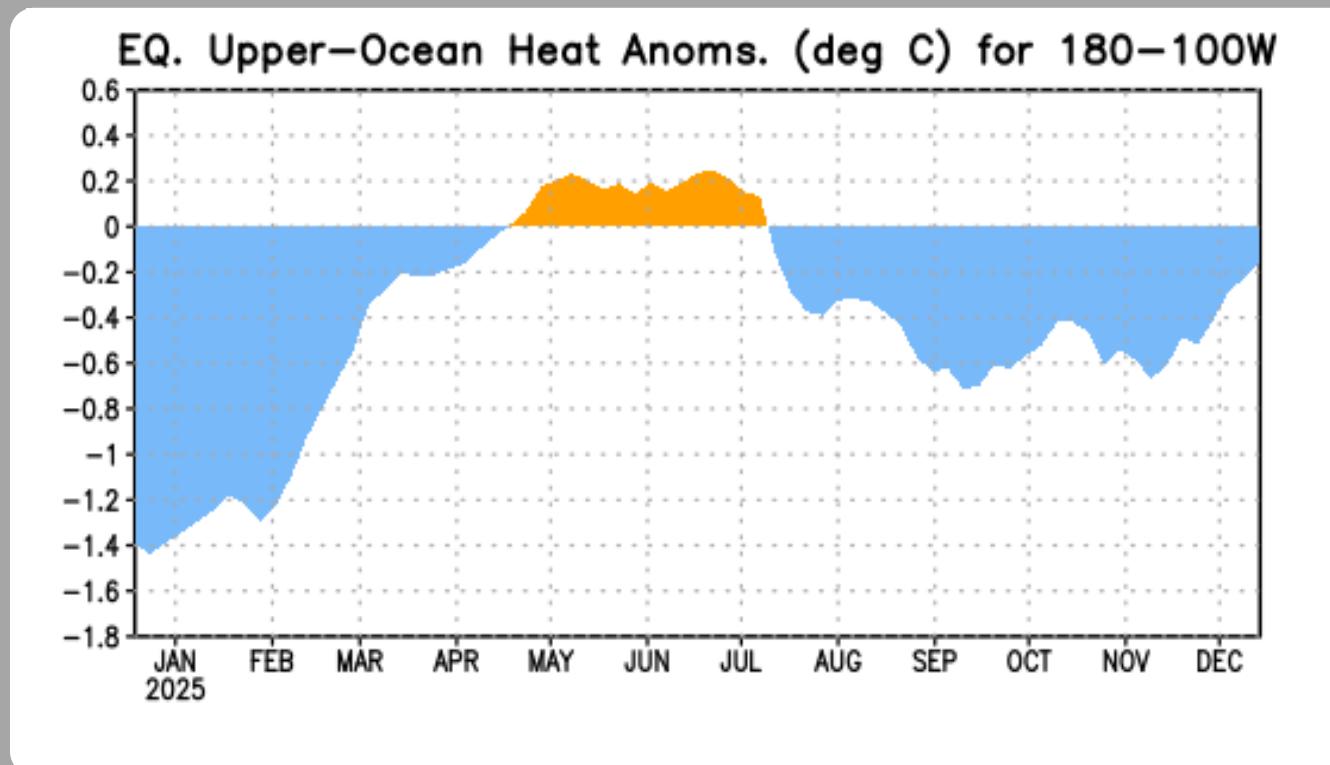
Recent values of the upper-ocean heat anomalies (below-average) and thermocline slope index (above-average) reflect La Niña.

*The monthly thermocline slope index represents the difference in anomalous depth of the 20°C isotherm between the western Pacific (160°E-150°W) and the eastern Pacific (90°-140°W).*



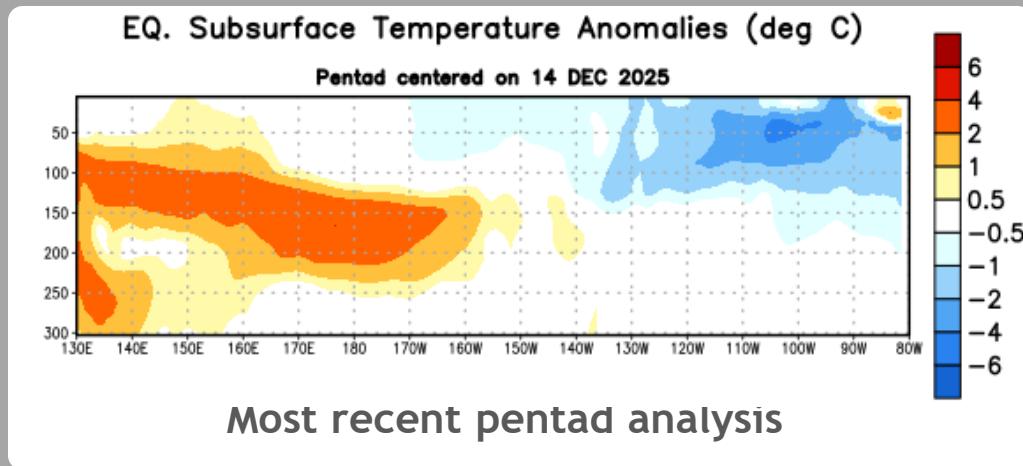
# Central and Eastern Pacific Upper-Ocean (0-300 m) Weekly Average Temperature Anomalies

Negative subsurface temperature anomalies dominated from the start of the period through the beginning of April 2025. The negative anomalies reached a minimum in December 2024. In February and March 2025, the negative anomalies significantly weakened. Weak positive anomalies were present from mid-April through early July. Negative anomalies emerged in mid-July 2025 and have weakened since mid-November 2025.

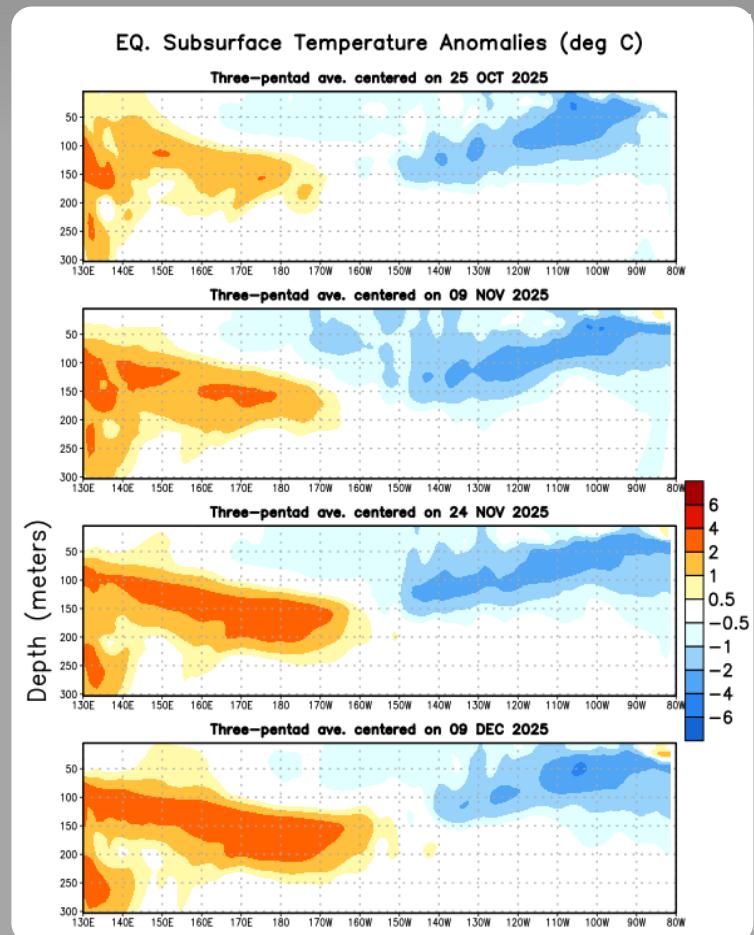


# Sub-Surface Temperature Departures in the Equatorial Pacific

Over the last couple of months, below-average subsurface temperatures weakened across the central and eastern Pacific.



Above-average subsurface temperatures strengthened in the western half of the Pacific and in the central Pacific, at depth.

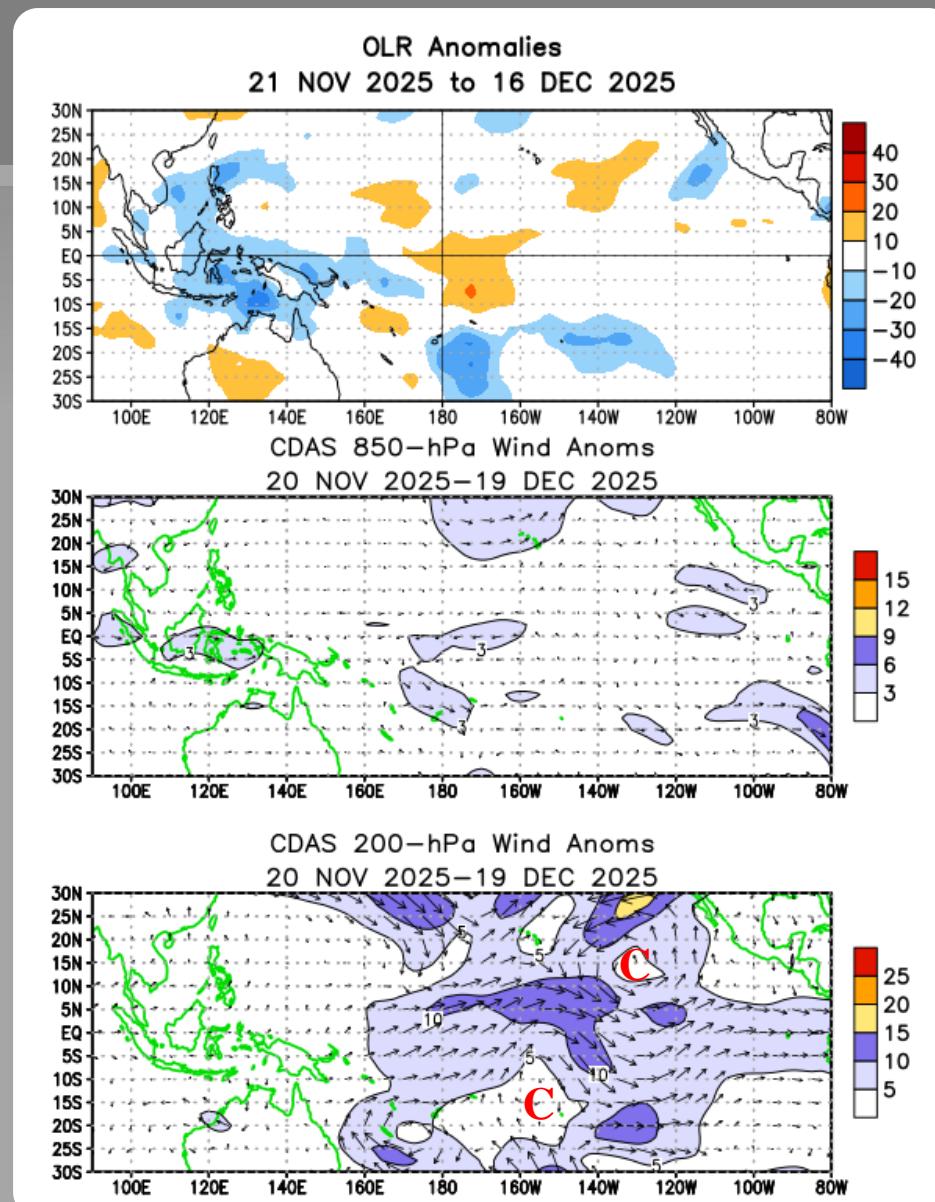


# Tropical OLR and Wind Anomalies During the Last 30 Days

Below-average OLR (enhanced convection and precipitation) was evident over Indonesia, southeastern Asia, the Philippines, and northern Australia. Above-average OLR (suppressed convection and precipitation) was observed near the Date Line.

Low-level (850-hPa) wind anomalies were easterly over a small area of the central equatorial Pacific Ocean.

Upper-level (200-hPa) wind anomalies were westerly over most of the equatorial Pacific. An anomalous cyclonic couplet straddled the equator over the east-central Pacific Ocean.



# Intraseasonal Variability

**Intraseasonal variability in the atmosphere (wind and pressure), which is often related to the Madden-Julian Oscillation (MJO), can significantly impact surface and subsurface conditions across the Pacific Ocean.**

**Related to this activity:**

**Significant weakening of the low-level easterly winds usually initiates an eastward-propagating oceanic Kelvin wave.**

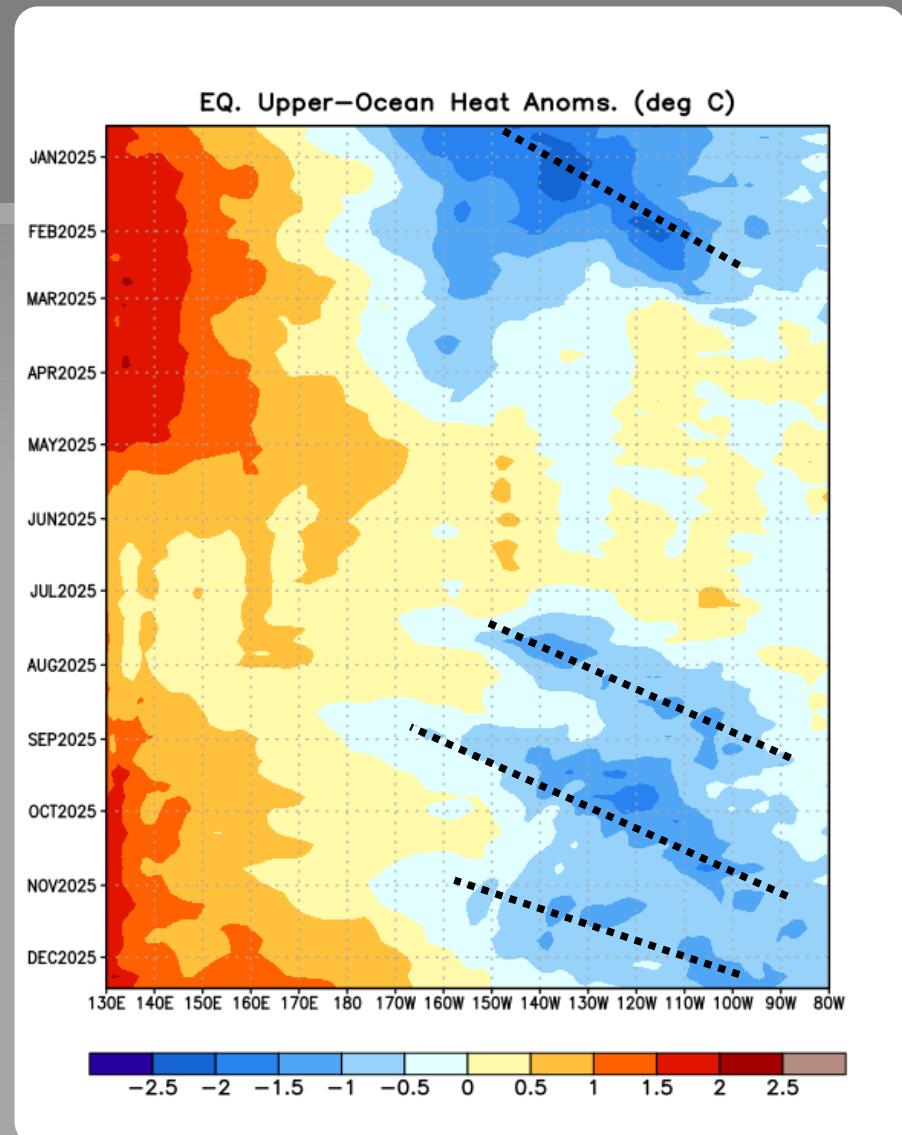
# Weekly Heat Content Evolution in the Equatorial Pacific

Significant equatorial oceanic Kelvin wave activity (dashed and dotted lines) has been present at times throughout the period shown.

Through February 2025, below-average subsurface temperatures dominated the east-central and eastern Pacific. Upwelling Kelvin waves were initiated during July, August, and October 2025.

From April to early July 2025, near-average temperatures dominated the central and eastern Pacific. Below-average temperatures returned in July 2025 and have persisted in the eastern half of the Pacific.

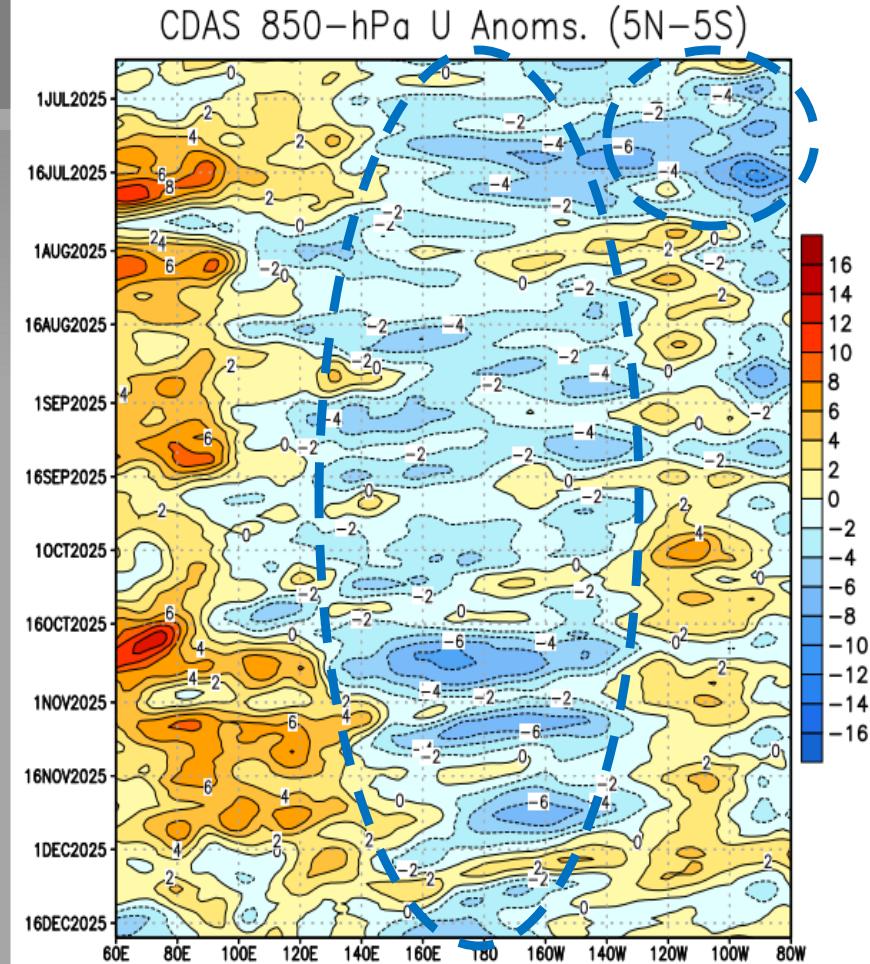
Equatorial oceanic Kelvin waves have alternating warm and cold phases. The warm phase is indicated by dashed lines. Down-welling and warming occur in the leading portion of a Kelvin wave, and up-welling and cooling occur in the trailing portion.



# Low-level (850-hPa) Zonal (east-west) Wind Anomalies ( $\text{m s}^{-1}$ )

At times, the Madden Julian-Oscillation (MJO) has contributed to the eastward propagation of low-level wind anomalies.

Since the beginning of the period, easterly wind anomalies mostly dominated the central Pacific Ocean.



Westerly Wind Anomalies (orange/red shading)  
Easterly Wind Anomalies (blue shading)

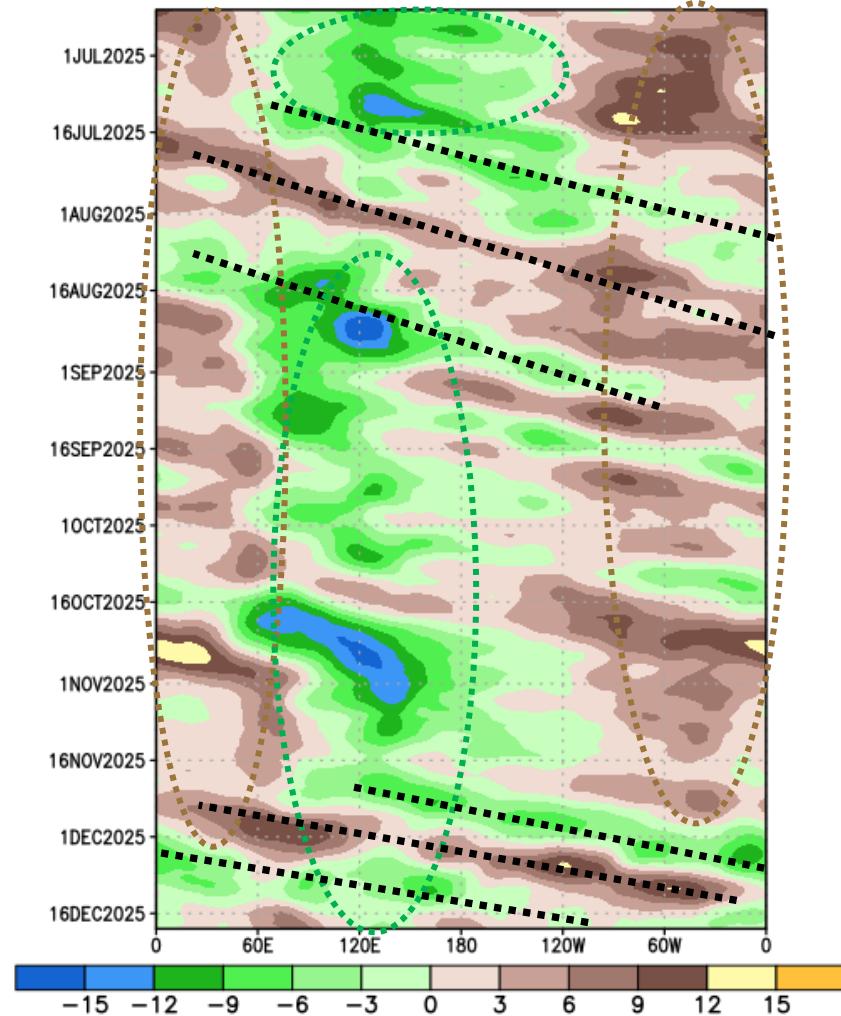
# Upper-level (200-hPa) Velocity Potential Anomalies

At times, regions of anomalous divergence (green shading) and convergence (brown shading) shifted eastward.

Through the end of July, anomalous divergence was mostly observed over the western and central Pacific. Beginning in August, anomalous divergence was observed mostly over Indonesia.

Since the beginning of the period, anomalous convergence mostly persisted outside of the tropical Pacific Ocean.

200-hPa Velocity Potential Anomaly: 5N–5S  
5-day Running Mean



Unfavorable for precipitation (brown shading)

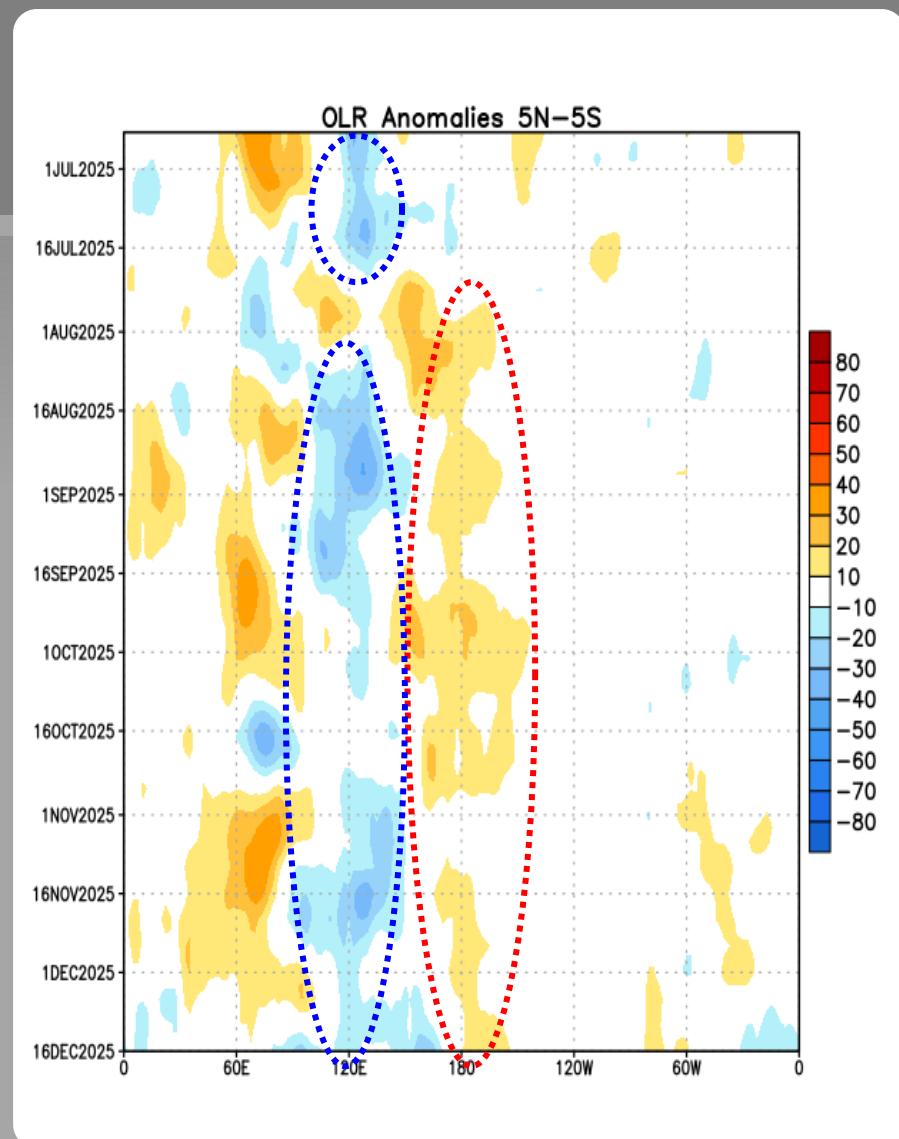
Favorable for precipitation (green shading)

Note: Eastward propagation is not necessarily indicative of the Madden-Julian Oscillation (MJO).

# Outgoing Longwave Radiation (OLR) Anomalies

Negative OLR anomalies (enhanced convection/rainfall) persisted over Indonesia through mid-July 2025 and emerged again in early August 2025.

Positive OLR anomalies (suppressed convection/rainfall) emerged near the Date Line in late July 2025 and mostly persisted.



# Oceanic Niño Index (ONI)

The ONI is based on SST departures from average in the Niño 3.4 region, and is a principal measure for monitoring, assessing, and predicting ENSO.

Defined as the three-month running-mean SST departures in the Niño 3.4 region. Departures are based on a set of improved homogeneous historical SST analyses (Extended Reconstructed SST - ERSST.v5). The SST reconstruction methodology is described in Huang et al., 2017, J. Climate, vol. 30, 8179-8205.)

It is one index that helps to place current events into a historical perspective.

Note: a different SST dataset is used for weekly SST monitoring (slides #4-9) and is using OISSTv2.1 (Huang et al., 2021).

# NOAA Operational Definitions for El Niño and La Niña

El Niño: characterized by a positive ONI greater than or equal to +0.5°C.

La Niña: characterized by a negative ONI less than or equal to -0.5°C.

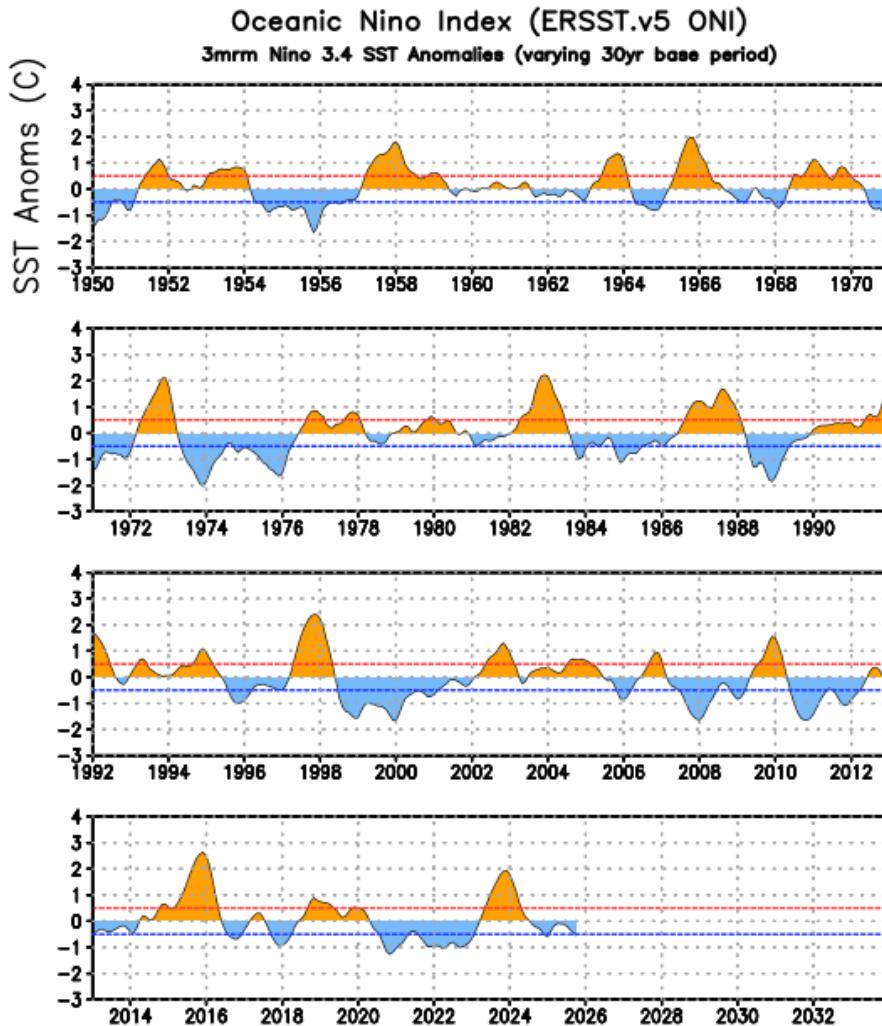
By historical standards, to be classified as a full-fledged El Niño or La Niña episode, these thresholds must be exceeded for a period of at least 5 consecutive overlapping 3-month seasons.

CPC considers El Niño or La Niña conditions to occur when the monthly Niño3.4 OISST departures meet or exceed +/- 0.5°C along with consistent atmospheric features. These anomalies must also be forecasted to persist for 3 consecutive months.

# ONI ( $^{\circ}\text{C}$ ): Evolution since 1950

The most recent ONI value (September - November 2025) is  $-0.6^{\circ}\text{C}$ .

El Niño  
↑  
Neutral  
La Niña  
↓



# Historical El Niño and La Niña Episodes Based on the ONI computed using ERSST.v5

Recent Pacific warm (red) and cold (blue) periods based on a threshold of +/- 0.5 °C for the Oceanic Niño Index (ONI) [3 month running mean of ERSST.v5 SST anomalies in the Nino 3.4 region (5N-5S, 120-170W)]. For historical purposes, periods of below and above normal SSTs are colored in blue and red when the threshold is met for a minimum of 5 consecutive over-lapping seasons.

The ONI is one measure of the El Niño-Southern Oscillation, and other indices can confirm whether features consistent with a coupled ocean-atmosphere phenomenon accompanied these periods. The complete table going back to DJF 1950 can be found [here](#).

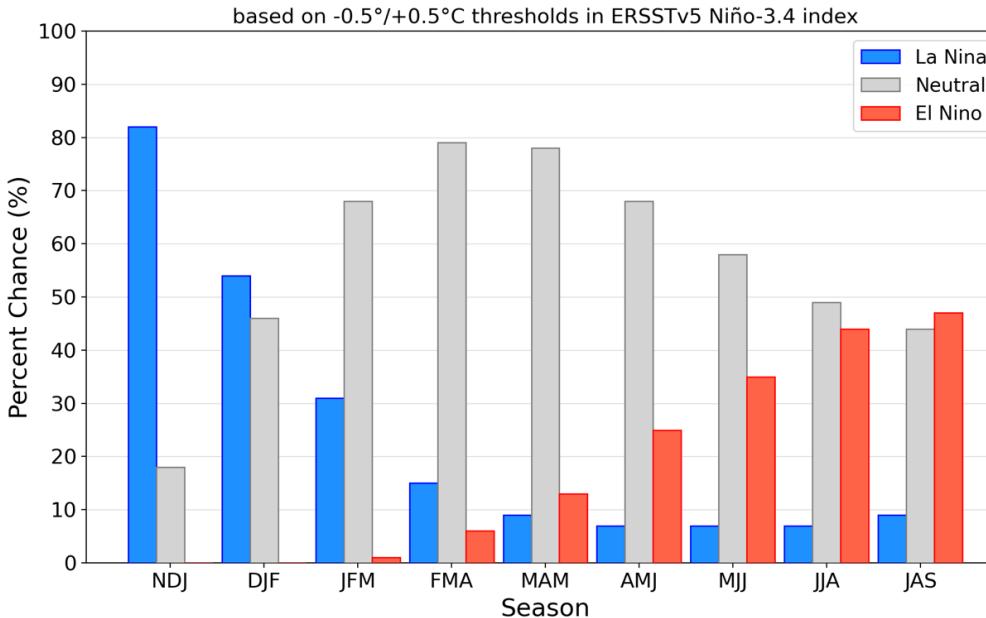
Year	DJF	JFM	FMA	MAM	AMJ	MJJ	JJA	JAS	ASO	SON	OND	NDJ
2013	-0.4	-0.4	-0.3	-0.3	-0.4	-0.4	-0.4	-0.3	-0.3	-0.2	-0.2	-0.3
2014	-0.4	-0.5	-0.3	0.0	0.2	0.2	0.0	0.1	0.2	0.5	0.6	0.7
2015	0.5	0.5	0.5	0.7	0.9	1.2	1.5	1.9	2.2	2.4	2.6	2.6
2016	2.5	2.1	1.6	0.9	0.4	-0.1	-0.4	-0.5	-0.6	-0.7	-0.7	-0.6
2017	-0.3	-0.2	0.1	0.2	0.3	0.3	0.1	-0.1	-0.4	-0.7	-0.8	-1.0
2018	-0.9	-0.9	-0.7	-0.5	-0.2	0.0	0.1	0.2	0.5	0.8	0.9	0.8
2019	0.7	0.7	0.7	0.7	0.5	0.5	0.3	0.1	0.2	0.3	0.5	0.5
2020	0.5	0.5	0.4	0.2	-0.1	-0.3	-0.4	-0.6	-0.9	-1.2	-1.3	-1.2
2021	-1.0	-0.9	-0.8	-0.7	-0.5	-0.4	-0.4	-0.5	-0.7	-0.8	-1.0	-1.0
2022	-1.0	-0.9	-1.0	-1.1	-1.0	-0.9	-0.8	-0.9	-1.0	-1.0	-0.9	-0.8
2023	-0.7	-0.4	-0.1	0.2	0.5	0.8	1.1	1.3	1.6	1.8	1.9	2.0
2024	1.8	1.5	1.1	0.7	0.4	0.2	0.0	-0.1	-0.2	-0.3	-0.4	-0.5
2025	-0.6	-0.4	-0.2	-0.1	-0.1	-0.1	-0.2	-0.3	-0.4	-0.6		

# CPC Probabilistic ENSO Outlook

Updated: 11 December 2025

La Niña is favored to continue for the next month or two, with a transition to ENSO-neutral most likely in January-March 2026 (68% chance).

Official NOAA CPC ENSO Probabilities (issued December 2025)



# IRI Pacific Niño 3.4 SST Model Outlook

Most models favor La Niña to persist through Northern Hemisphere winter 2025-26 (December-February) before transitioning to ENSO-neutral in January-March 2026.

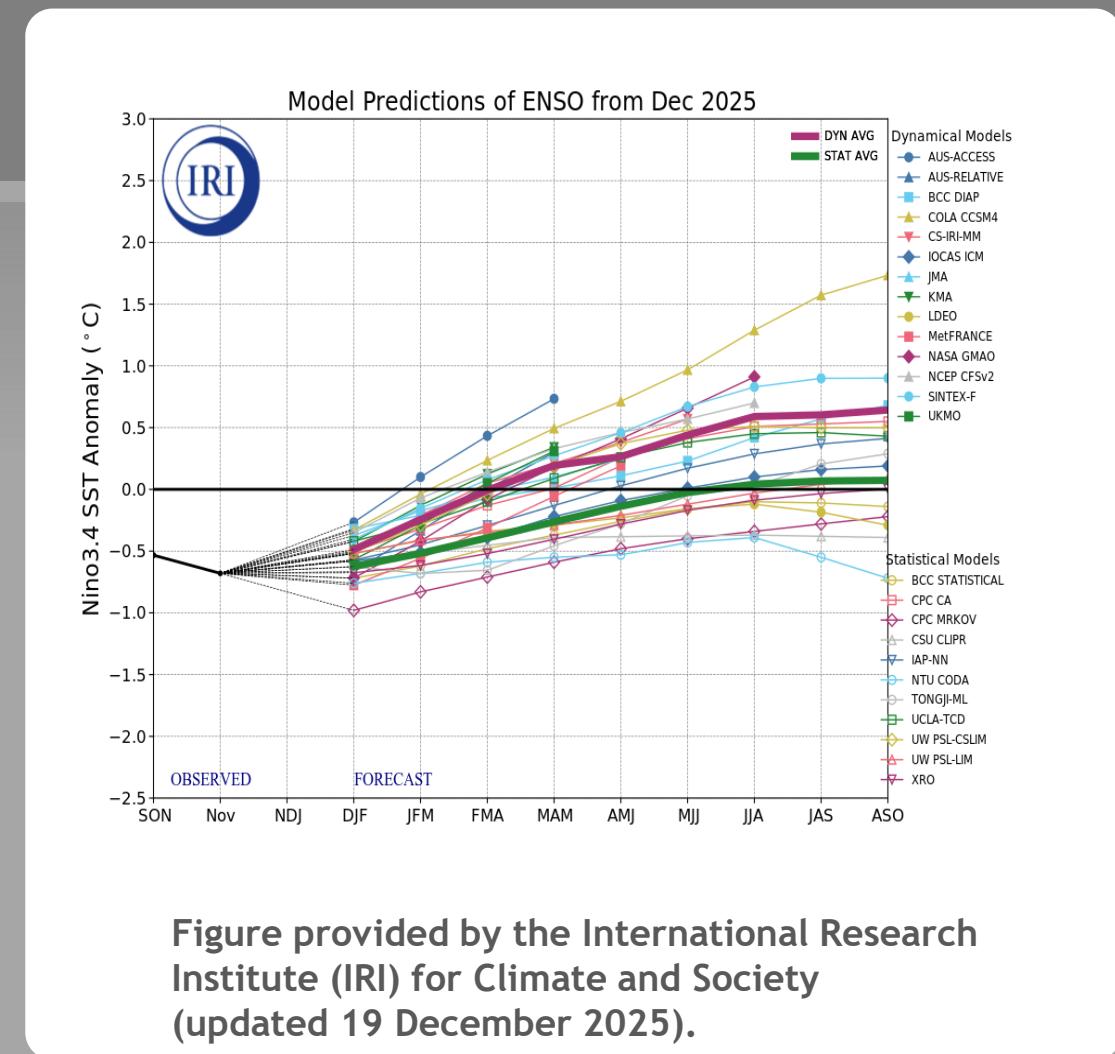
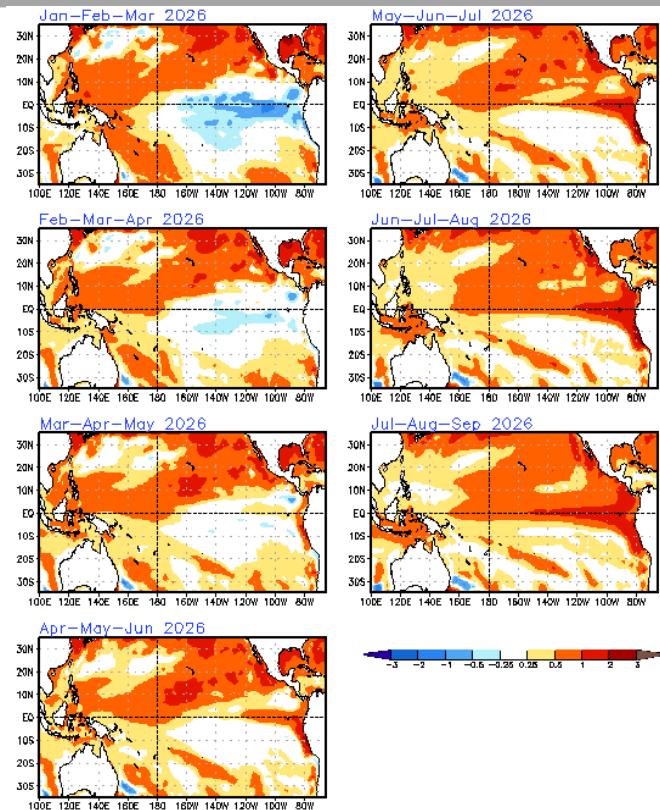
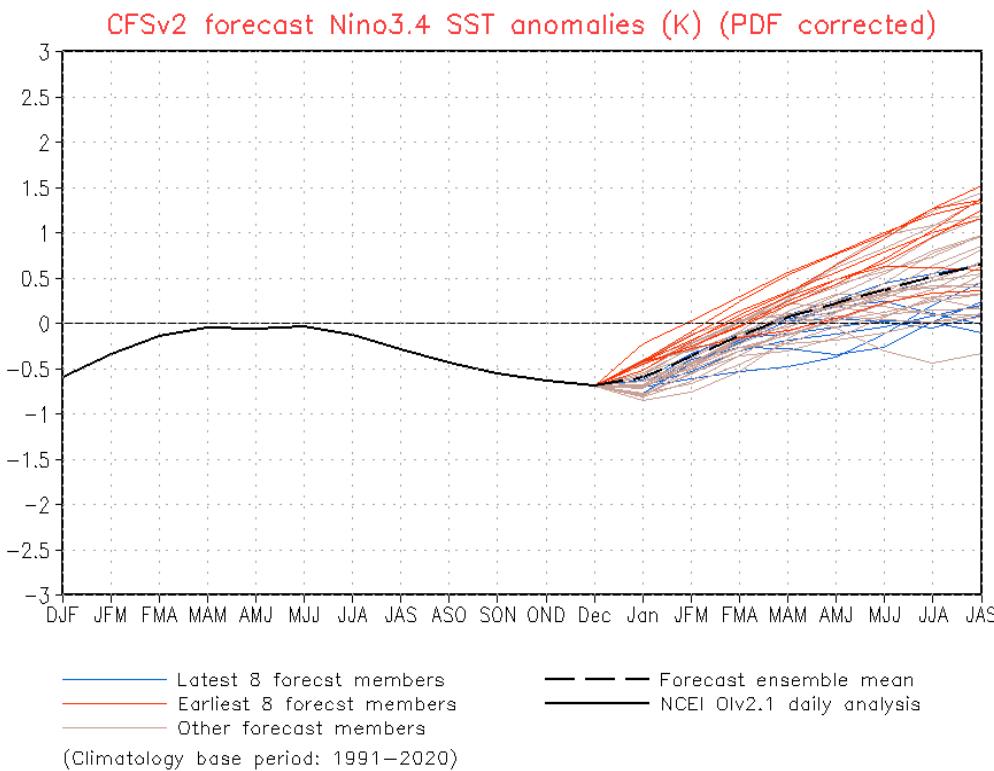


Figure provided by the International Research Institute (IRI) for Climate and Society (updated 19 December 2025).

# SST Outlook: NCEP CFS.v2 Forecast (PDF corrected)

Issued: 22 December 2025

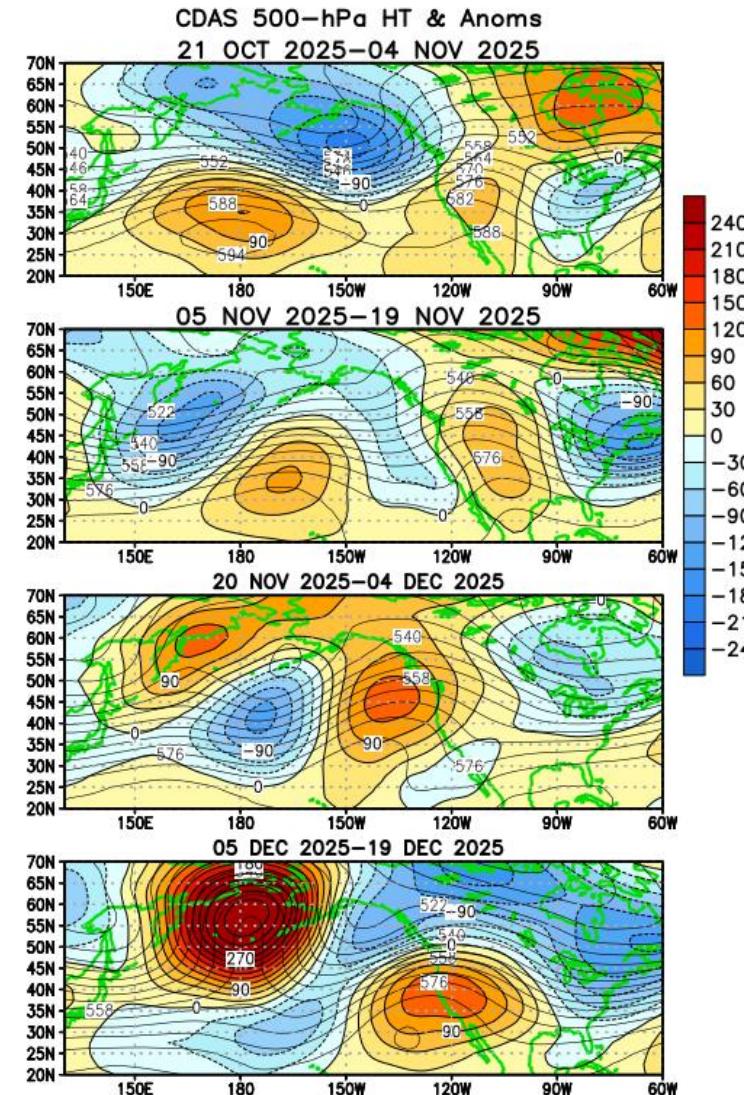
The CFS.v2 ensemble mean (black dashed line) favors La Niña persisting for the next month and then transitioning to ENSO-neutral by early 2026.



# Atmospheric anomalies over the North Pacific and North America During the Last 60 Days

During the period, below-average heights and temperatures persisted over parts of the eastern U.S. At the same time above-average heights and temperatures tended to dominate the western and/or central U.S.

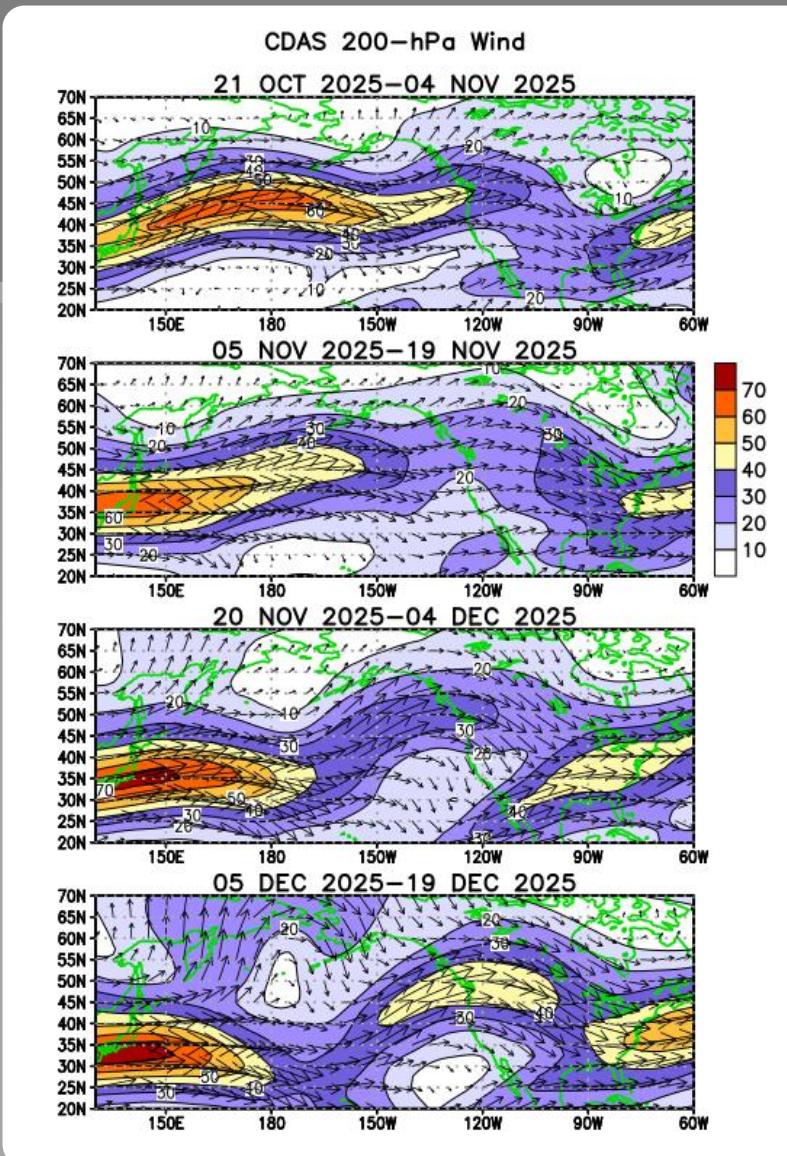
The pattern over the North Pacific Ocean has been variable.



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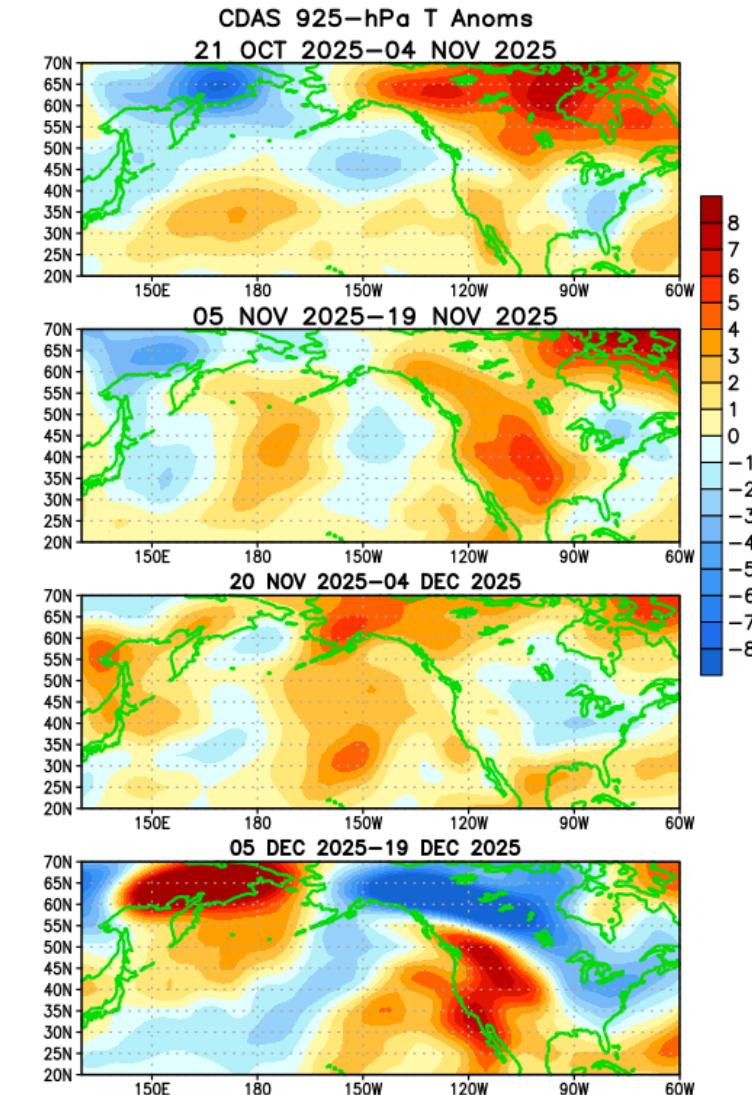
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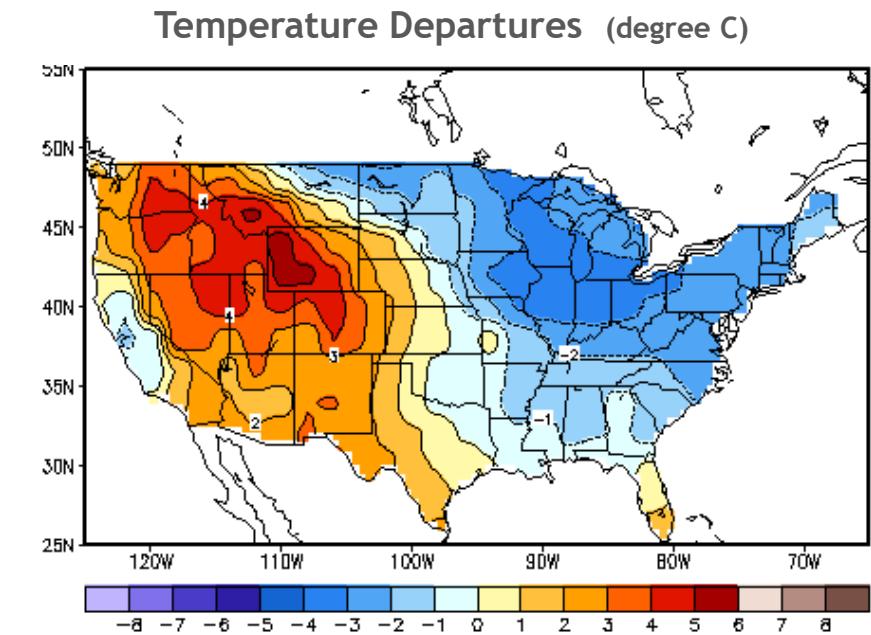
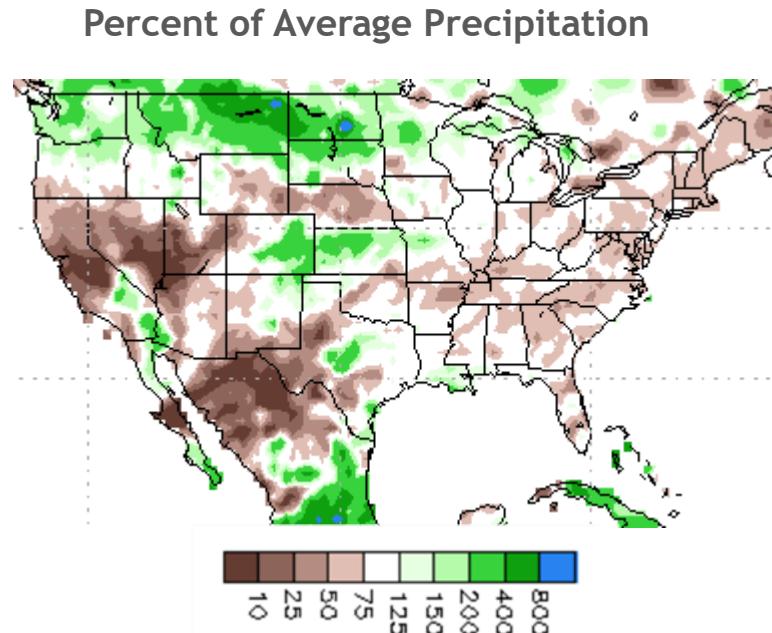
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# U.S. Temperature and Precipitation Departures During the Last 30 Days

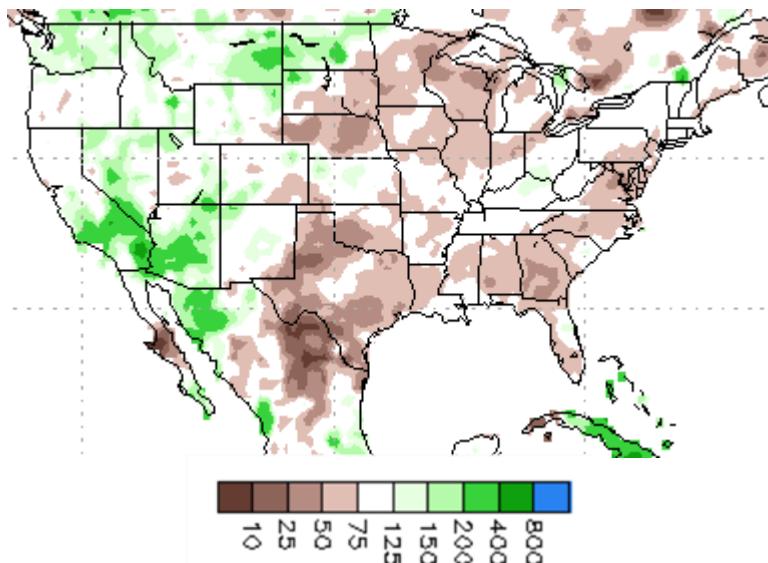
End Date: 20 December 2025



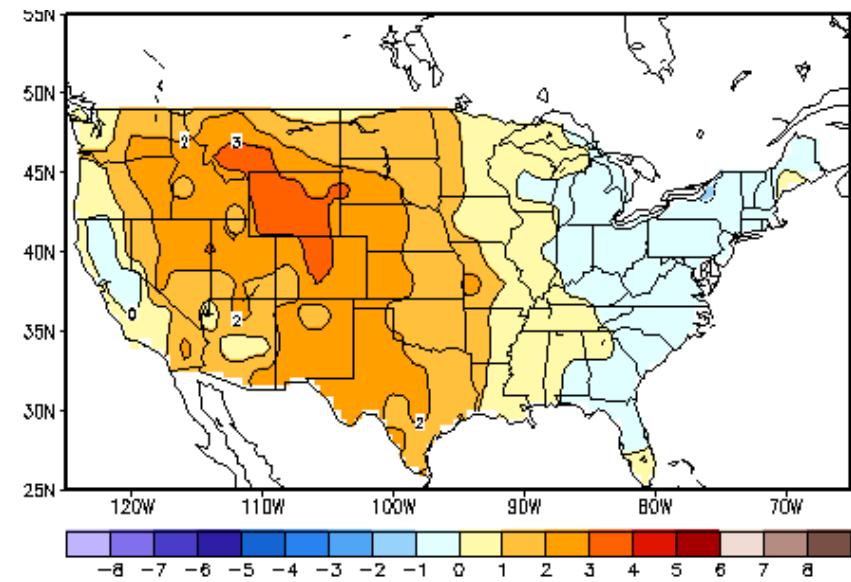
# U.S. Temperature and Precipitation Departures During the Last 90 Days

End Date: 20 December 2025

Percent of Average Precipitation



Temperature Departures (degree C)



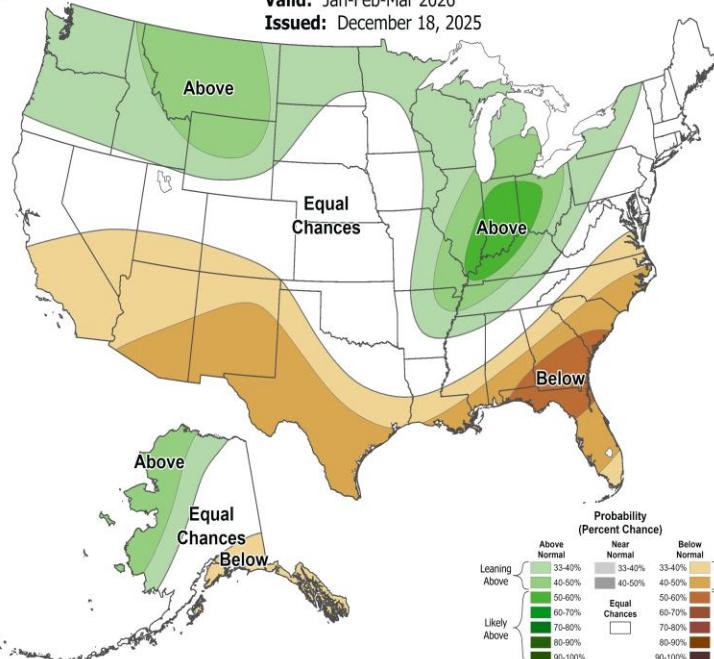
# U. S. Seasonal Outlooks

January - March 2026

The seasonal outlooks combine the effects of long-term trends, soil moisture, and, when appropriate, ENSO.

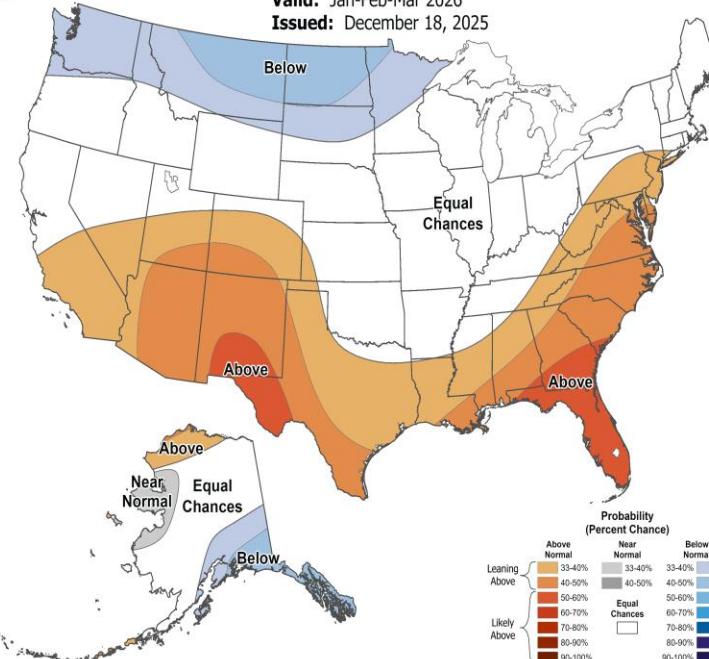
## Precipitation

### Seasonal Precipitation Outlook



## Temperature

### Seasonal Temperature Outlook



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La Niña is favored to continue for the next month or two, with a transition to ENSO-neutral most likely in January-March 2026 (68% chance).\*

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