

# EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC DISCUSSION

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CLIMATE PREDICTION CENTER/NCEP/NWS

12 September 2024

ENSO Alert System Status: [La Niña Watch](#)

**Synopsis: La Niña is favored to emerge in September-November (71% chance) and is expected to persist through January-March 2025.**

ENSO-neutral continued during August 2024, with near-average sea surface temperatures (SSTs) observed across most of the equatorial Pacific Ocean (Fig. 1). The weekly Niño indices did not change substantially during the month, with the latest weekly index values varying between +0.2°C (Niño-4) and -0.4°C (Niño-1+2; Fig. 2). Below-average subsurface temperatures were also similar to those in early August (area-averaged index in Fig. 3). Negative temperature anomalies continued to dominate across most of the subsurface equatorial Pacific Ocean (Fig. 4). Low-level wind anomalies were easterly over most of the equatorial Pacific, and upper-level wind anomalies were easterly over the east-central Pacific. Convection was slightly enhanced over parts of Indonesia and was near average near the Date Line (Fig. 5). Both the Southern Oscillation index and the equatorial Southern Oscillation indices were positive. Collectively, the coupled ocean-atmosphere system reflected ENSO-neutral.

The IRI plume predicts a weak and a short duration La Niña, as indicated by the Niño-3.4 index values less than -0.5°C (Fig. 6). This month, the team relies more on the latest North American Multi-Model Ensemble (NMME) guidance, which predicts La Niña to emerge in the next couple of months and continue through the Northern Hemisphere winter. The continuation of negative subsurface temperatures and enhanced low-level easterly wind anomalies supports the formation of [a weak La Niña](#). A weaker La Niña implies that it would be less likely to result in conventional winter impacts, though predictable signals could still influence the forecast guidance (e.g., [CPC's seasonal outlooks](#)). In summary, La Niña is favored to emerge in September-November (71% chance) and is expected to persist through January-March 2025 (Fig. 7).

This discussion is a consolidated effort of the National Oceanic and Atmospheric Administration (NOAA), NOAA's National Weather Service, and their funded institutions. Oceanic and atmospheric conditions are updated weekly on the Climate Prediction Center website ([El Niño/La Niña Current Conditions and Expert Discussions](#)). Additional perspectives and analyses are also available in an [ENSO blog](#). A probabilistic strength forecast is [available here](#). The next ENSO Diagnostics Discussion is scheduled for 10 October 2024. To receive an e-mail notification when the monthly ENSO Diagnostic Discussions are released, please send an e-mail message to: [ncep.list.ens0-update@noaa.gov](mailto:ncep.list.ens0-update@noaa.gov).

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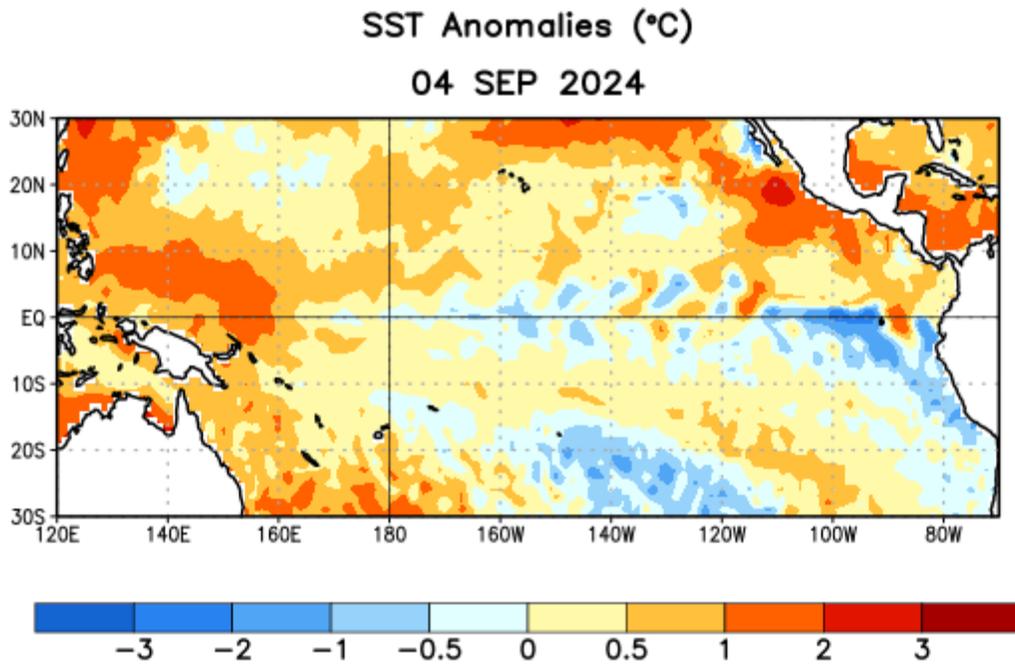


Figure 1. Average sea surface temperature (SST) anomalies (°C) for the week centered on 4 September 2024. Anomalies are computed with respect to the 1991-2020 base period weekly means.

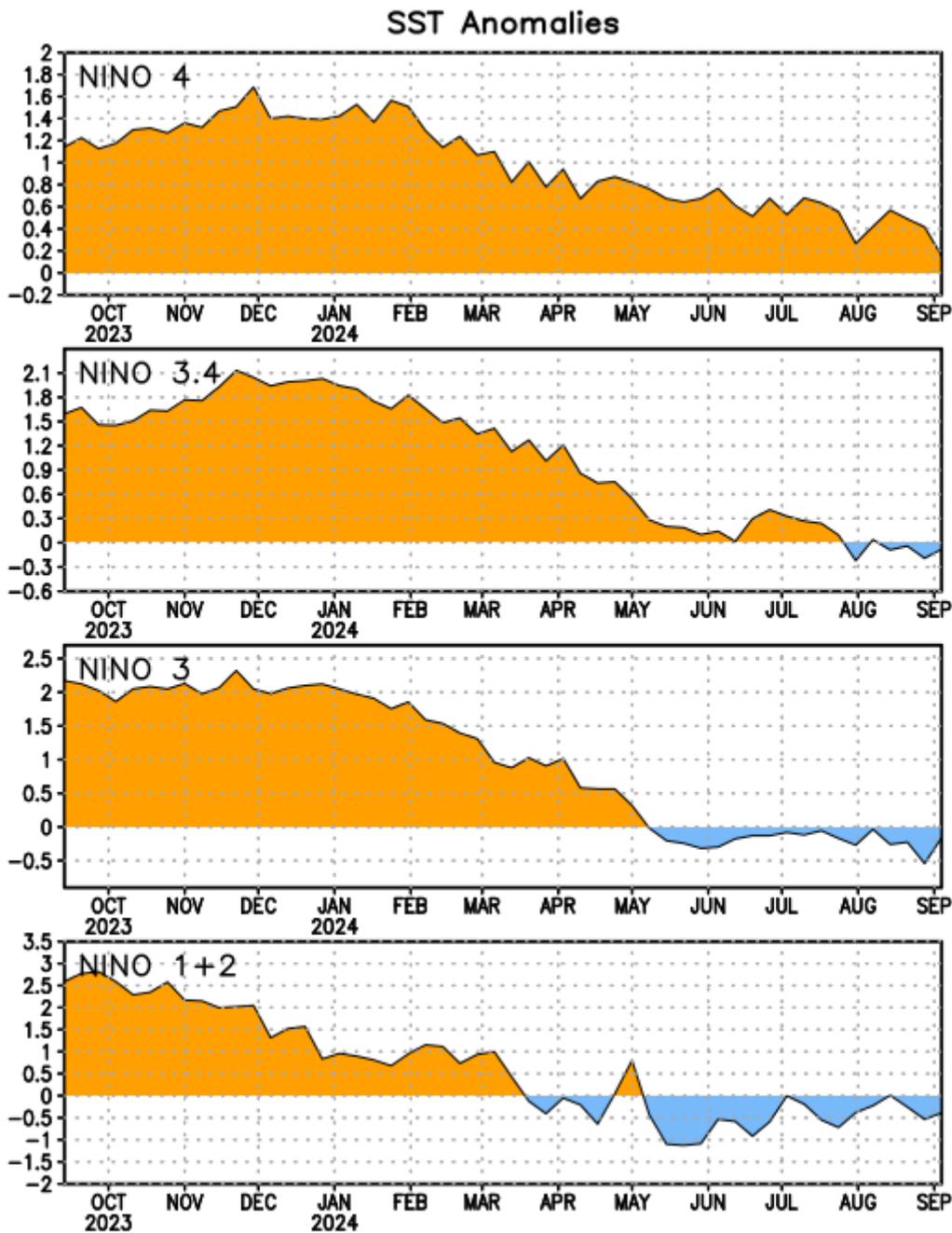


Figure 2. Time series of area-averaged sea surface temperature (SST) anomalies ( $^{\circ}\text{C}$ ) in the Niño regions [Niño-1+2 ( $0^{\circ}$ - $10^{\circ}\text{S}$ ,  $90^{\circ}\text{W}$ - $80^{\circ}\text{W}$ ), Niño-3 ( $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ ,  $150^{\circ}\text{W}$ - $90^{\circ}\text{W}$ ), Niño-3.4 ( $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ ,  $170^{\circ}\text{W}$ - $120^{\circ}\text{W}$ ), Niño-4 ( $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ ,  $150^{\circ}\text{W}$ - $160^{\circ}\text{E}$ )]. SST anomalies are departures from the 1991-2020 base period weekly means.

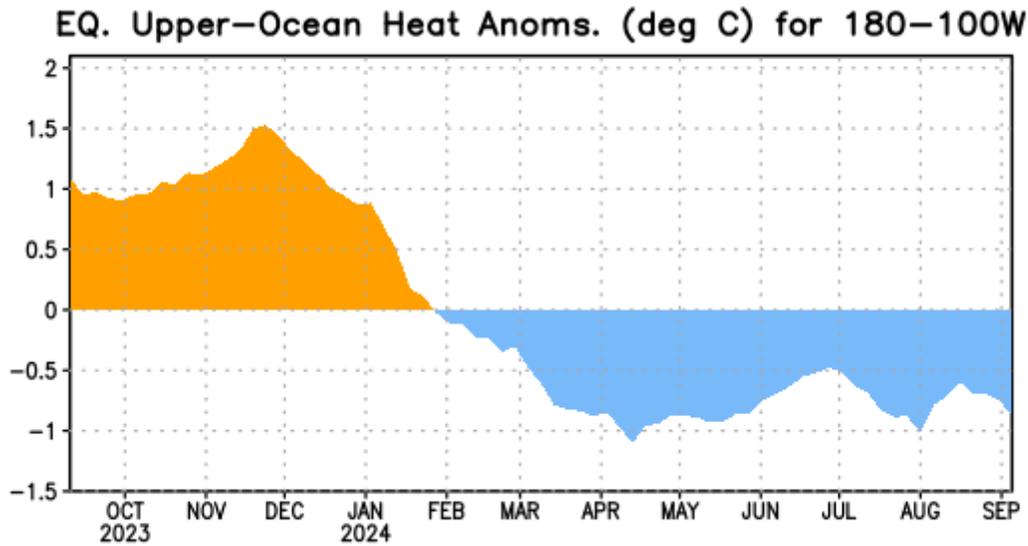


Figure 3. Area-averaged upper-ocean heat content anomaly ( $^{\circ}\text{C}$ ) in the equatorial Pacific ( $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ ,  $180^{\circ}$ - $100^{\circ}\text{W}$ ). The heat content anomaly is computed as the departure from the 1991-2020 base period pentad means.

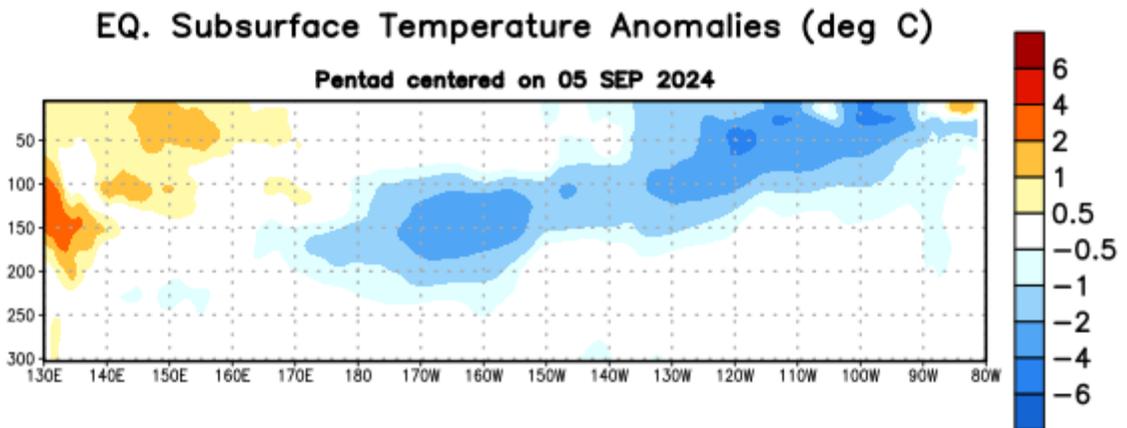


Figure 4. Depth-longitude section of equatorial Pacific upper-ocean (0-300m) temperature anomalies ( $^{\circ}\text{C}$ ) centered on the pentad of 5 September 2024. Anomalies are departures from the 1991-2020 base period pentad means.

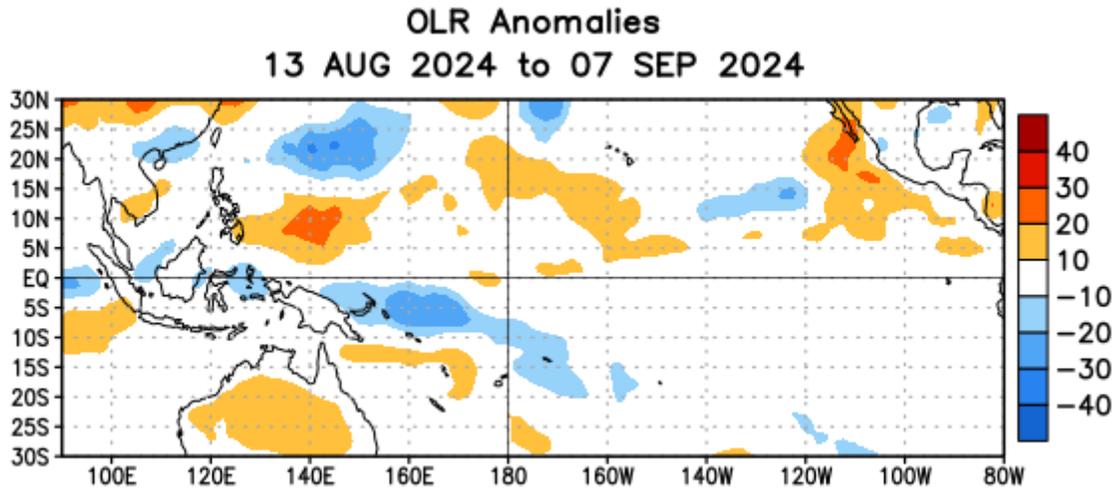


Figure 5. Average outgoing longwave radiation (OLR) anomalies ( $\text{W/m}^2$ ) for the period 13 August – 7 September 2024. OLR anomalies are computed as departures from the 1991-2020 base period pentad means.

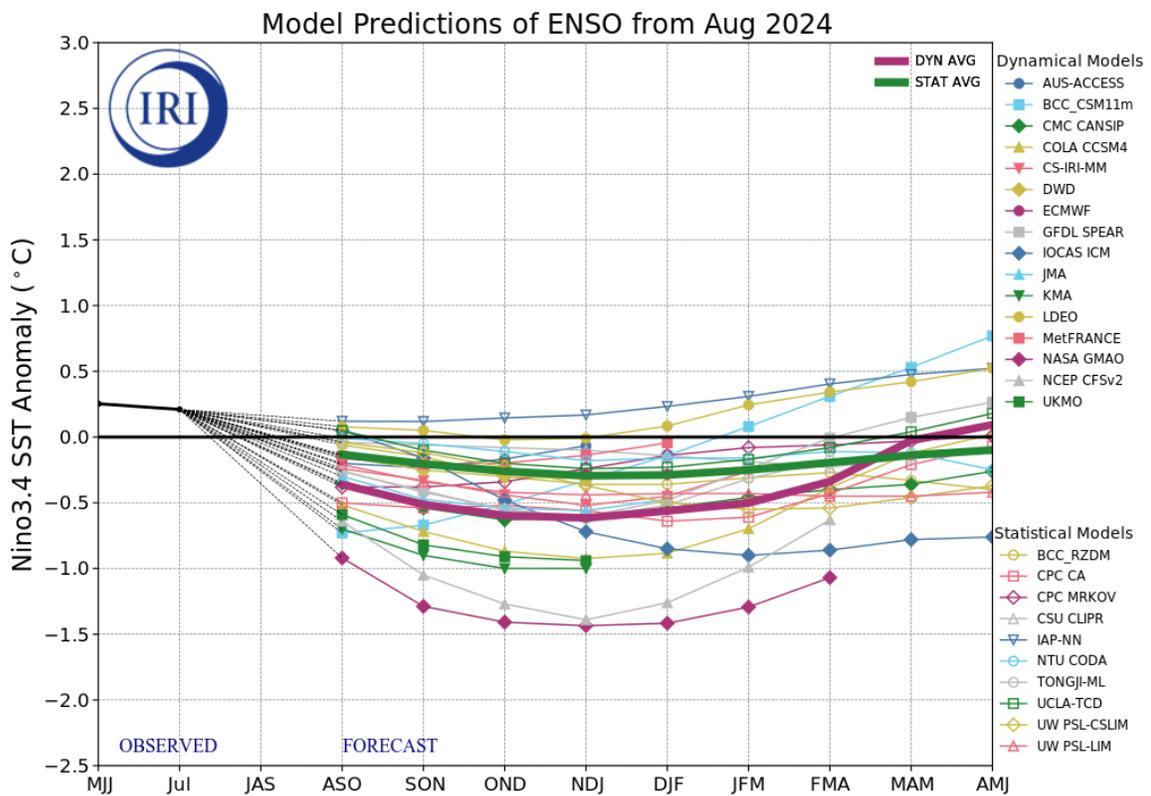


Figure 6. Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region ( $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ ,  $120^{\circ}\text{W}$ - $170^{\circ}\text{W}$ ). Figure updated 19 August 2024 by the International Research Institute (IRI) for Climate and Society.

## Official NOAA CPC ENSO Probabilities (issued September 2024)

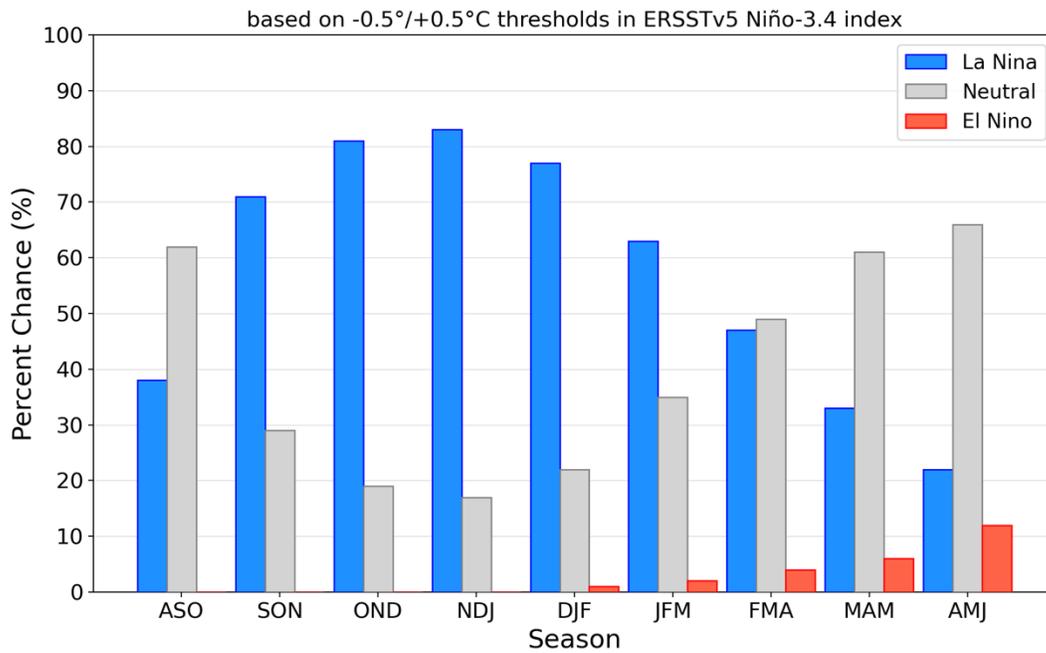


Figure 7. Official ENSO probabilities for the Niño 3.4 sea surface temperature index ( $5^{\circ}\text{N}$ - $5^{\circ}\text{S}$ ,  $120^{\circ}\text{W}$ - $170^{\circ}\text{W}$ ). Figure updated 12 September 2024.