EL NIÑO/SOUTHERN OSCILLATION (ENSO) DIAGNOSTIC DISCUSSION

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CLIMATE PREDICTION CENTER/NCEP/NWS

13 June 2024

ENSO Alert System Status: Final El Niño Advisory / La Niña Watch

Synopsis: ENSO-neutral conditions are present. La Niña is favored to develop during July-September (65% chance) and persist into the Northern Hemisphere winter 2024-25 (85% chance during November-January).

ENSO-neutral conditions returned during the past month. Near-to-below average sea surface temperatures (SSTs) expanded across the eastern equatorial Pacific Ocean (Fig. 1). The most recent weekly Niño-3.4 index was +0.1°C, while SST anomalies remained cooler in the far eastern Niño-1+2 region (-0.5°C) and warmer in the western Niño-4 region (+0.8°C; Fig. 2). Below-average subsurface temperatures were mostly unchanged during the past month (area-averaged index in Fig. 3), with negative anomalies persisting in the eastern half of the Pacific (Fig. 4). Low-level wind anomalies were easterly over the east-central equatorial Pacific, and upper-level winds were near average. Convection was mostly average around Indonesia, while below-average rainfall strengthened near the Date Line (Fig. 5). Collectively, the coupled ocean-atmosphere system reflected ENSO-neutral conditions.

The most recent IRI plume indicates La Niña may develop during July-September 2024 and then persist through the Northern Hemisphere winter (Fig. 6). The forecast team is also favoring the development of La Niña during July-September because the rate of cooling has slowed since last month. The team still favors La Niña to emerge sometime during the summer months, given the persistent below-average subsurface ocean temperatures and changes in the tropical atmospheric circulation. In summary, ENSO-neutral conditions are present. La Niña is favored to develop during July-September (65% chance) and persist into the Northern Hemisphere winter 2024-25 (85% chance during November-January; 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 11 July 2024. To receive an e-mail notification when the monthly ENSO Diagnostic Discussions are released, please send an e-mail message to: ncep.list.enso-update@noaa.gov.

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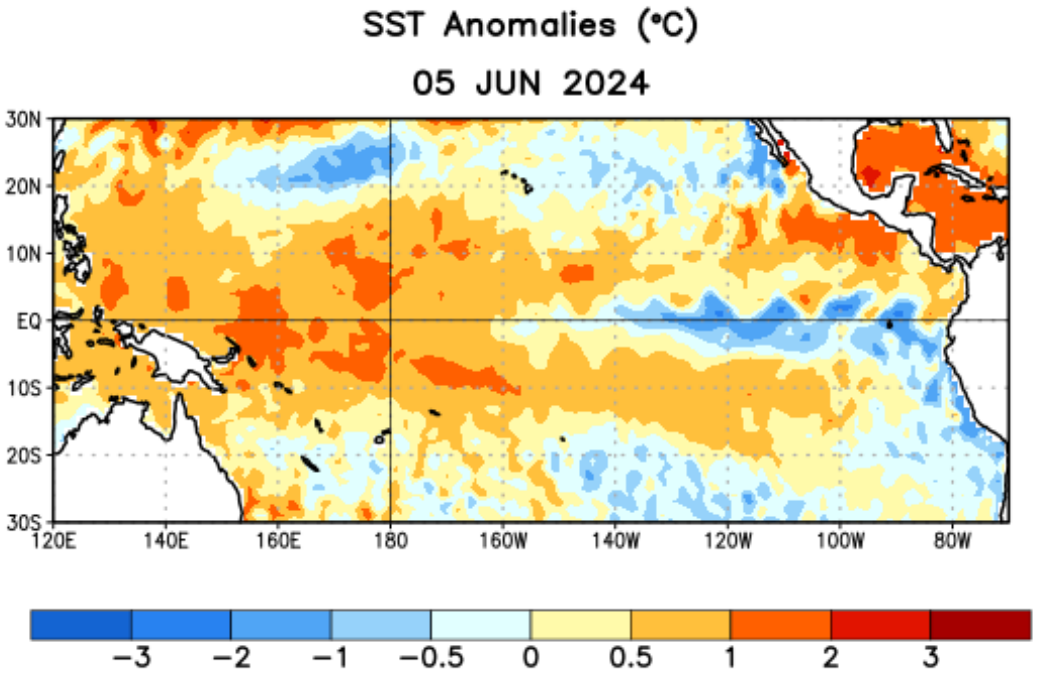

Figure 1. Average sea surface temperature (SST) anomalies (°C) for the week centered on 5 June 2024. Anomalies are computed with respect to the 1991-2020 base period weekly means.

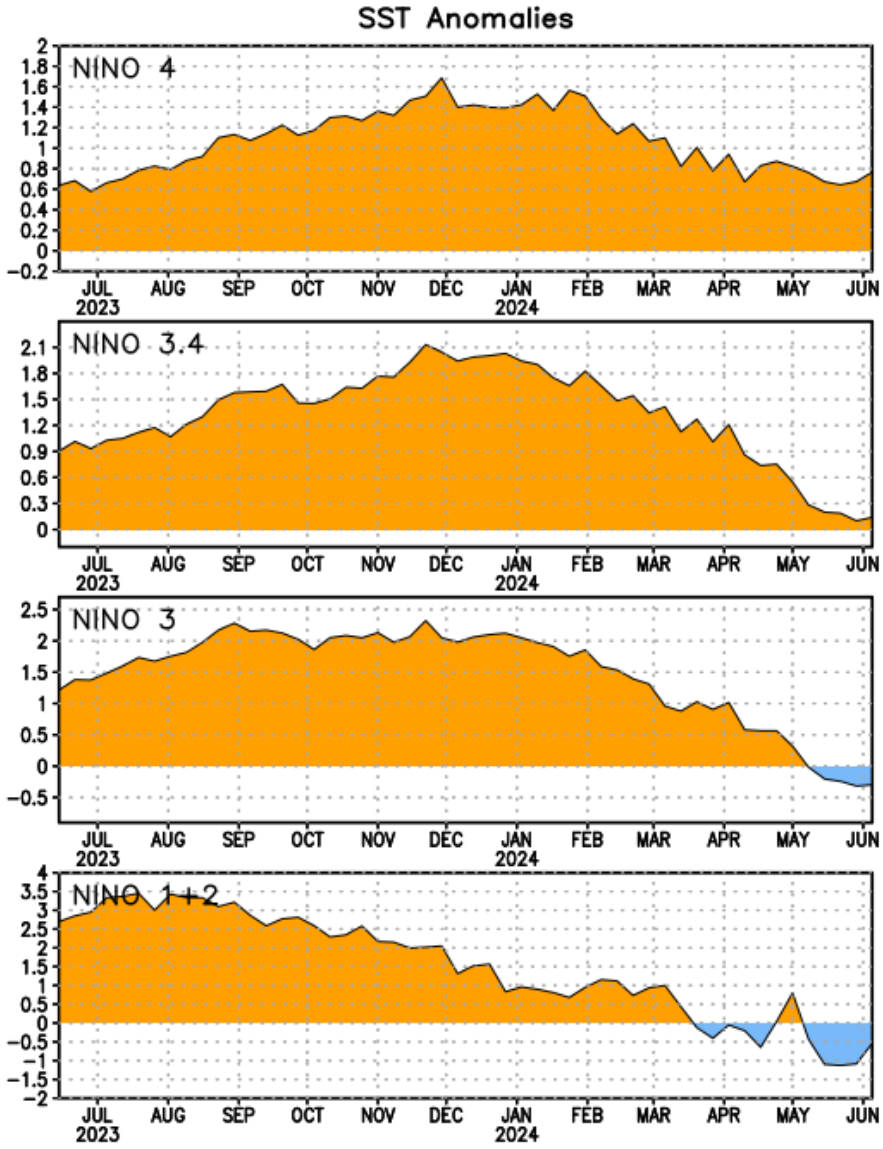

Figure 2. Time series of area-averaged sea surface temperature (SST) anomalies (°C) in the Niño regions [Niño-1+2 (0°-10°S, 90°W-80°W), Niño-3 (5°N-5°S, 150°W-90°W), Niño-3.4 (5°N-5°S, 170°W-120°W), Niño-4 (5ºN-5ºS, 150ºW-160ºE)]. SST anomalies are departures from the 1991-2020 base period weekly means.

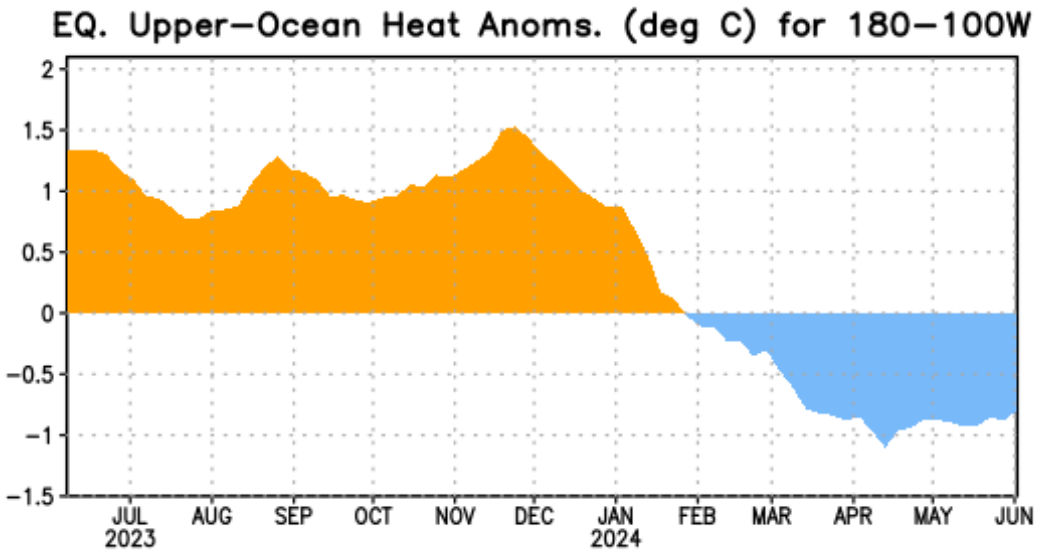

Figure 3. Area-averaged upper-ocean heat content anomaly (°C) in the equatorial Pacific (5°N-5°S, 180°-100°W). The heat content anomaly is computed as the departure from the 1991-2020 base period pentad means.

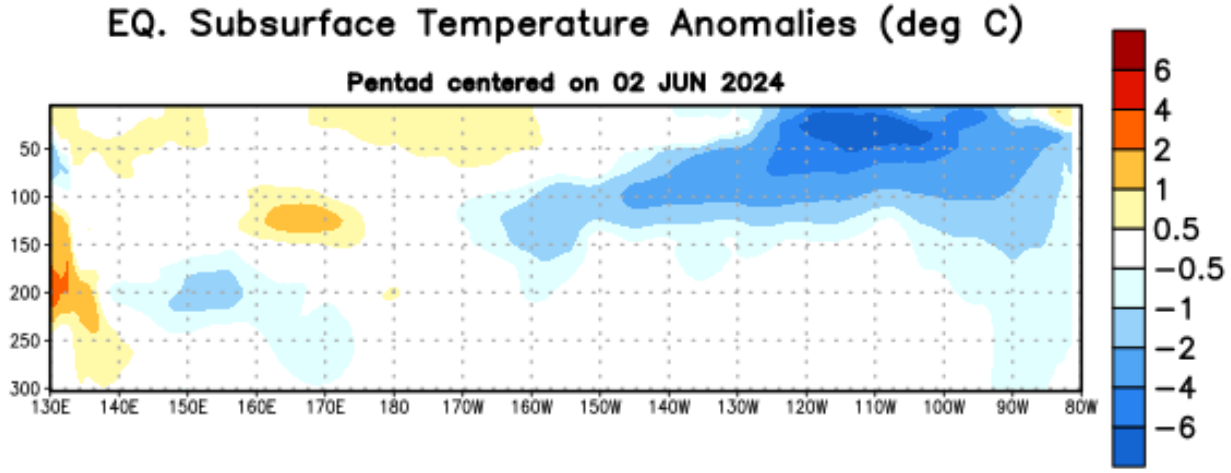

Figure 4. Depth-longitude section of equatorial Pacific upper-ocean (0-300m) temperature anomalies (°C) centered on the pentad of 2 June 2024. Anomalies are departures from the 1991-2020 base period pentad means.

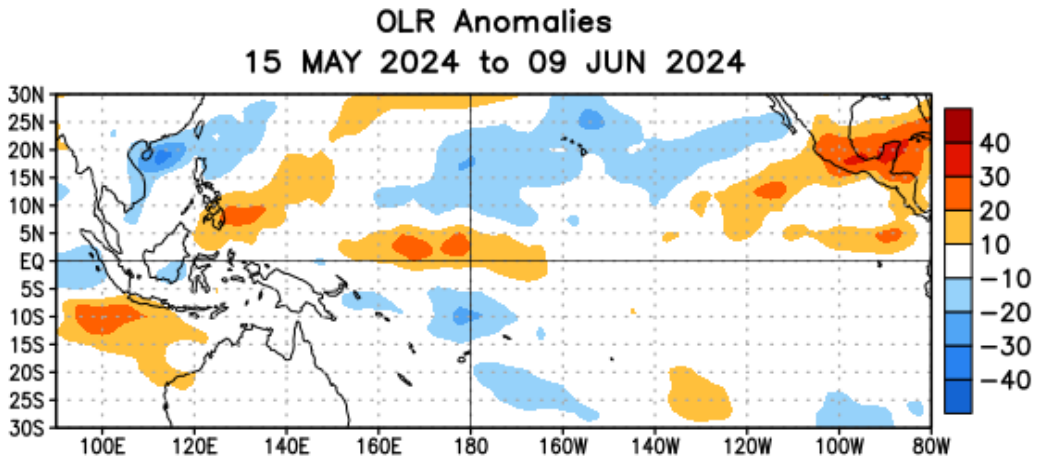

Figure 5. Average outgoing longwave radiation (OLR) anomalies (W/m^2) for the period 15 May – 9 June 2024. OLR anomalies are computed as departures from the 1991-2020 base period pentad means.

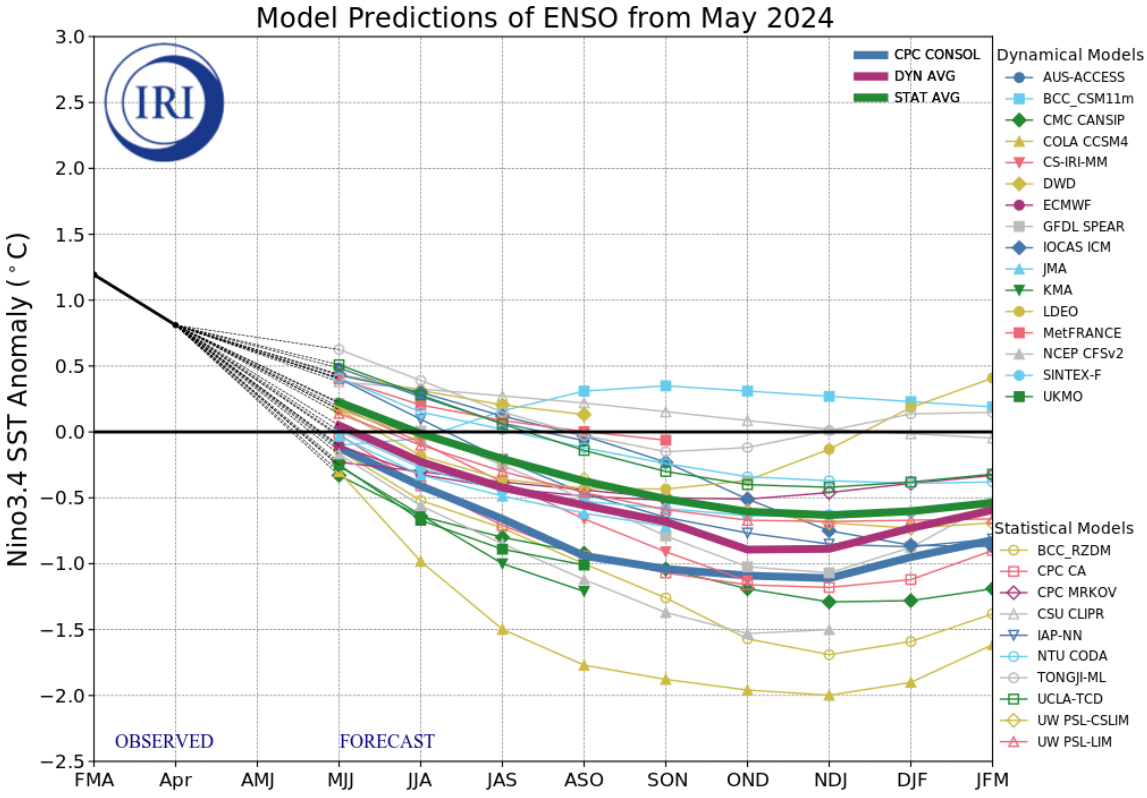

Figure 6. Forecasts of sea surface temperature (SST) anomalies for the Niño 3.4 region (5°N-5°S, 120°W-170°W). Figure updated 20 May 2024 by the International Research Institute (IRI) for Climate and Society.

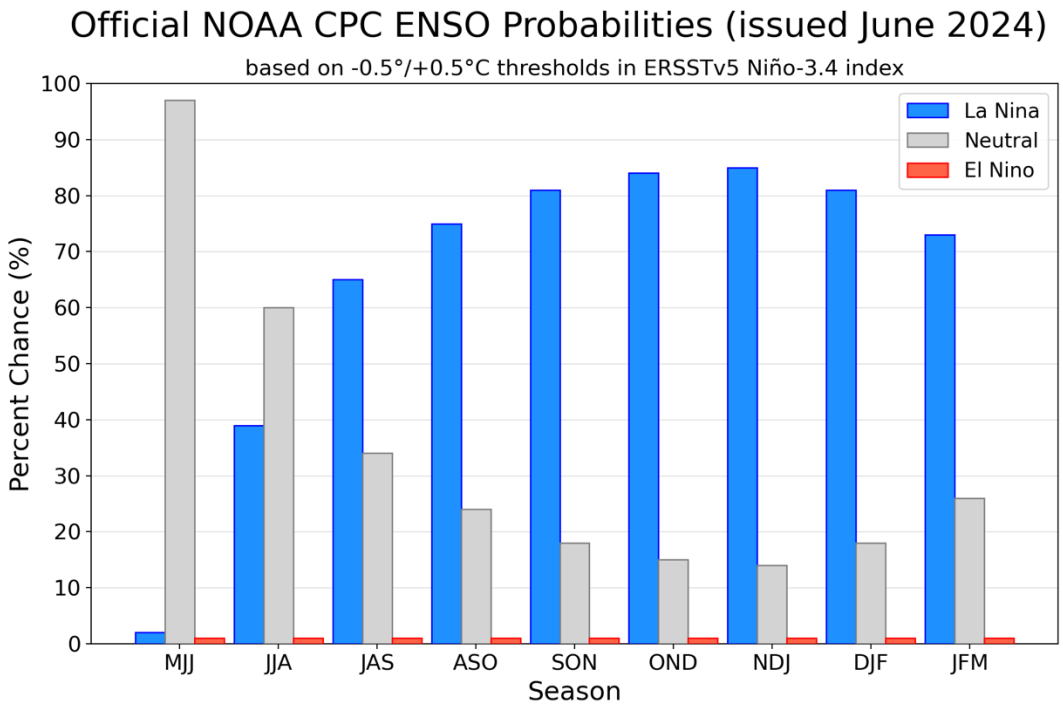

Figure 7. Official ENSO probabilities for the Niño 3.4 sea surface temperature index (5°N-5°S, 120°W-170°W). Figure updated 13 June 2024.