



El Niño and Southern Oscillation (ENSO) Outlook

Central Weather Administration, Taiwan. Published on the 15 of each month.

Issued: 15 April 2025

Synopsis: The current tropical Pacific circulation patterns indicate an ENSO-neutral state. Model forecasts suggest that ENSO-neutral conditions will likely prevail from spring through summer.

In March 2025, ocean-atmosphere conditions indicated an ENSO-neutral state. Equatorial sea surface temperatures (SSTs) were below average in the central and east-central Pacific Ocean, while above-average SSTs persisted in the far western Pacific and eastern Pacific (Figure 1a). Outgoing longwave radiation (OLR) from the Indian Ocean to the Philippine Sea was below average, indicating active convection, while convection in the central equatorial Pacific remained suppressed (Figure 1b). Low-level winds exhibited predominantly easterly anomalies in the central Pacific and westerly anomalies in the Indian Ocean. The magnitude and extent of subsurface warm water in the tropical western Pacific have been sustained alongside a cool water mass in the thermocline layer east of the dateline (Figure 2). The CWA model indicates that ENSO-neutral conditions will prevail between April and September 2025 (see Figure 3). In conclusion, ENSO is currently in a neutral state. Most models predict that ENSO-neutral conditions are favored from Northern Hemisphere spring through summer; however, uncertainty in ENSO predictions remains high.

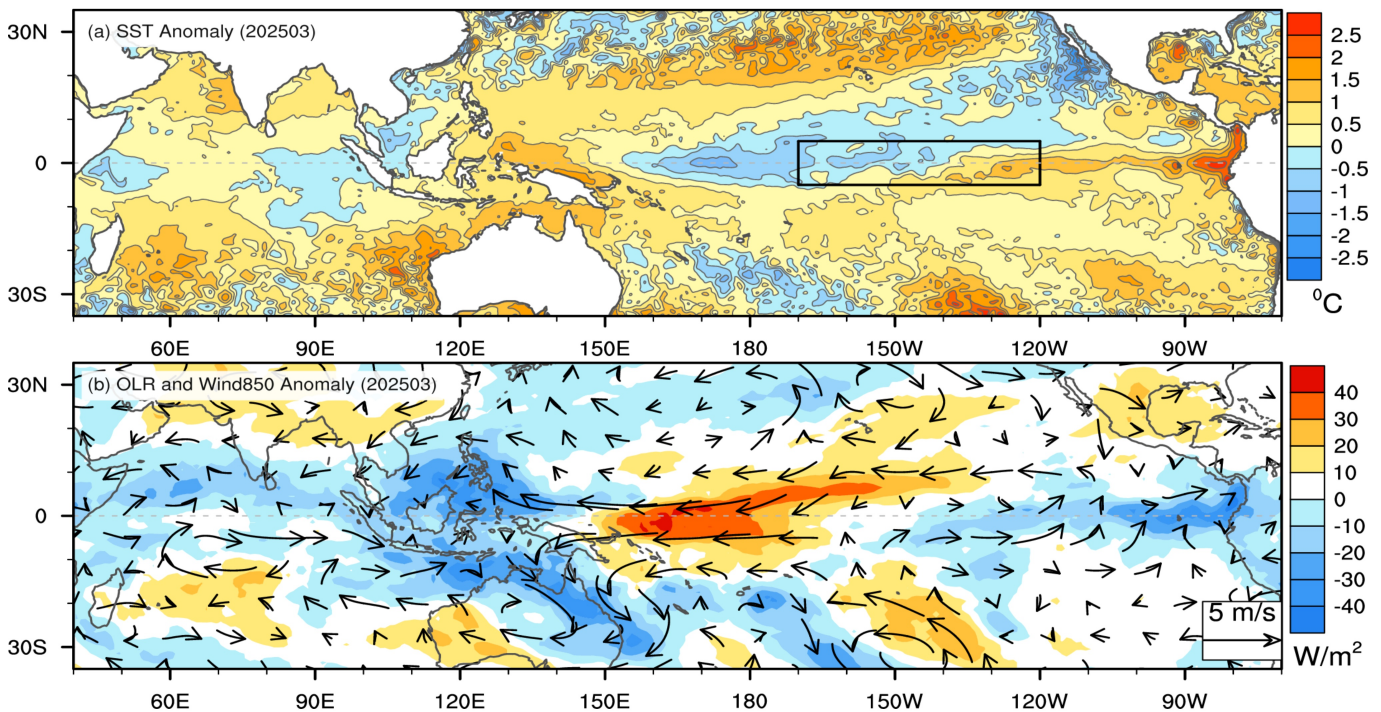


Figure 1. (a) Monthly mean sea surface temperature anomalies (SST, unit: °C) and (b) outgoing long-wave radiation (OLR, units: W/m², shading) and wind at 850hPa (vectors, unit: m/s) anomalies in the tropical Pacific and Indian Oceans.

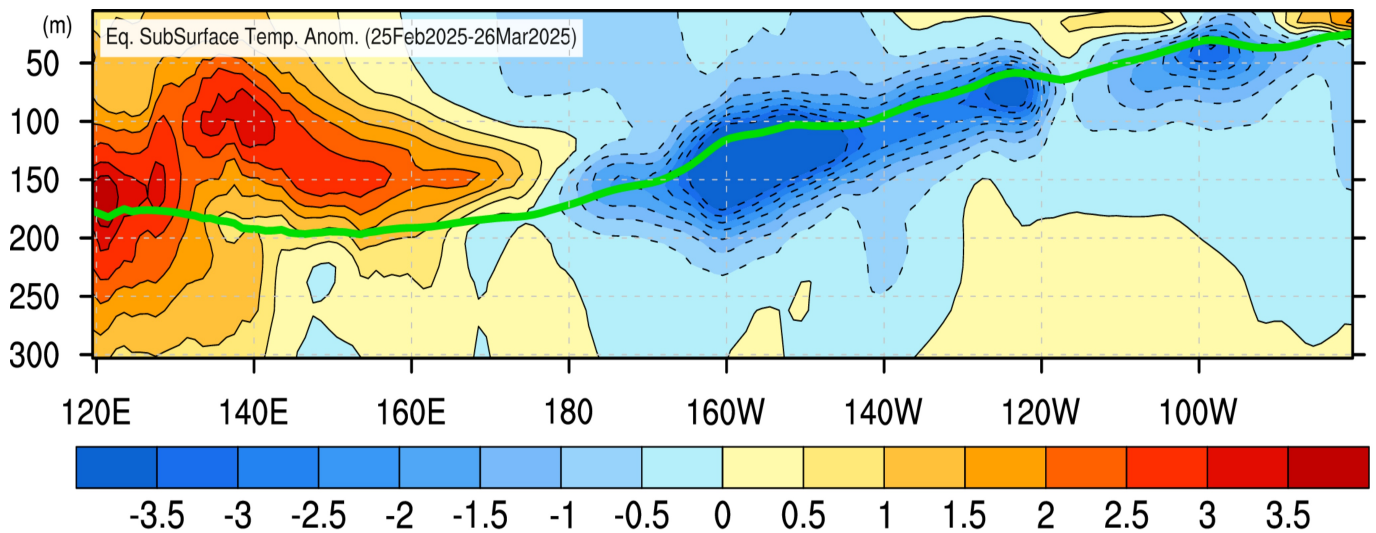


Figure 2. Depth-longitude cross sections of temperature anomalies (°C) along the equator in the Pacific Ocean from the ocean data assimilation system.

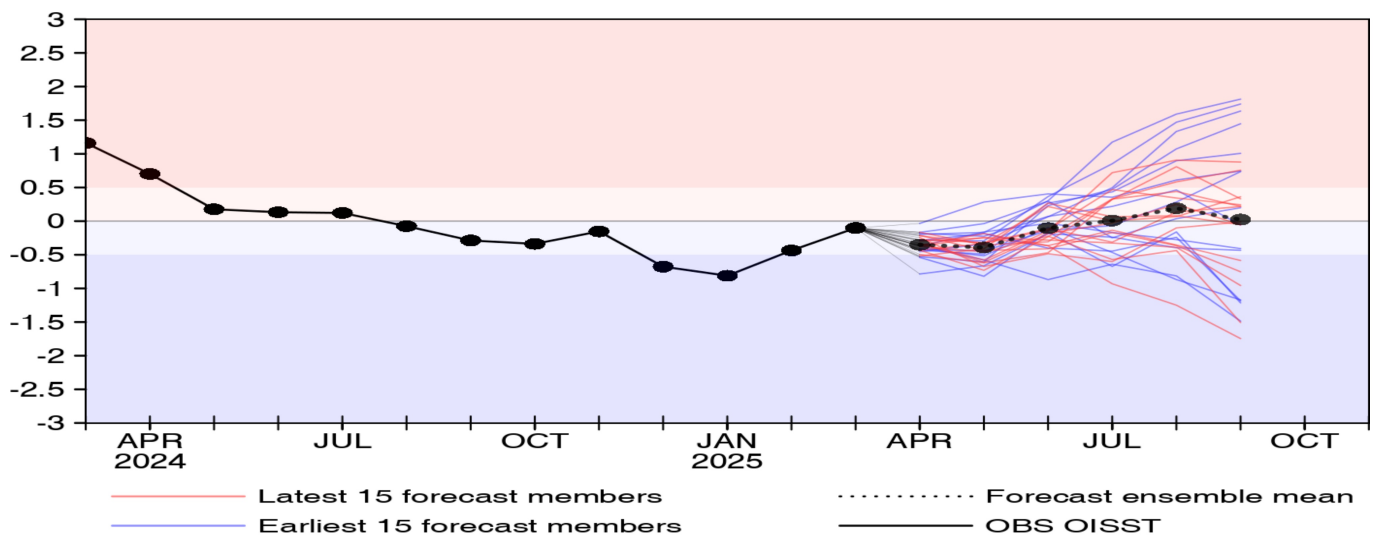


Figure 3. Observed (black solid line) and forecast ensemble mean (black dashed line) and the individual members (red and blue lines) of the Niño 3.4 (5°N-5°S, 120°-170°W)

Notes:

1. The base period of normal in this report is 1991-2020.
2. The CWA definition of ENSO events is based on Oceanic Niño Index (ONI) (3 month running mean of Niño 3.4), and the threshold is the ONI greater than ± 0.5 for a minimum of 5 consecutive overlapping seasons. The corresponding atmospheric circulation patterns with SST anomalies are also considered to determine the status of ENSO.
3. The analysis data used in this report are from National Centers for Environmental Prediction/National Center for Atmospheric Research (NCEP/NCAR) Reanalysis I, OLR from National Oceanic and Atmospheric Administration (NOAA), SST from NOAA Optimum Interpolation SST (OISST) V2, and subsurface oceanic temperature from NCEP Global Ocean Data Assimilation System (GODAS).
4. The forecast Niño 3.4 is from CWACFSv2, the CWA operational seasonal forecast system in Taiwan which is an atmosphere-ocean coupling model with T119L60 resolution.