



El Niño/La Niña Update

November 2024

Current Situation and Outlook

As of end-November 2024, ENSO-neutral conditions, which began in May 2024, persist in the equatorial Pacific Ocean. Sea surface temperatures remain slightly below average across much of the central to eastern equatorial Pacific. Latest forecasts from the WMO Global Producing Centres of Seasonal Prediction indicate that the sea surface temperatures are expected to decrease, with the chance of La Niña conditions developing more likely than not (55% chance) during December 2024 to February 2025 and January to March 2025, while the chance of continuation of ENSO-neutral conditions is slightly lower, estimated at 45%. If La Niña emerges, it may be a relatively short-lived event, as the chance of La Niña during February-April 2025 is estimated to decrease slightly to around 45%, with ENSO-neutral conditions possibly becoming dominant again, estimated at 55%. The chance of El Niño developing is negligible during the forecast period. National Meteorological and Hydrological Services (NMHSs) will closely monitor changes in the state of ENSO over the coming months and provide updated outlooks, as needed.

As of end-November 2024, oceanic and atmospheric observations continue to reflect ENSO-neutral conditions (i.e., neither El Niño nor La Niña), with sea surface temperatures slightly below average over much of the central to eastern equatorial Pacific. Cold subsurface temperature anomalies have persisted east of the International Dateline since May 2024. However, this cooling has not yet translated into cold sea surface temperatures typical of La Niña thresholds. One possible reason for this slow development is the strong westerly wind anomalies observed for much of the time from September to early November 2024, which are not conducive for La Niña development. The overlying atmospheric conditions, including surface and upper-level winds as well as patterns of cloudiness and rainfall, remain consistent with ENSO-neutral conditions. The Southern Oscillation Index (SOI), defined as the standardized Tahiti minus Darwin sea-level pressure difference, remained within the ENSO-neutral range during September and October 2024. Cloudiness near the equatorial International Date Line is below average, with enhanced convection and precipitation over Indonesia. Overall, observed oceanic and atmospheric conditions indicate ENSO-neutral conditions.

Using the recent observations as the starting point for their dynamical seasonal prediction systems, the WMO Global Producing Centres of Seasonal Prediction routinely issue global-scale climate forecasts for the coming

months. Their latest forecasts and expert assessments suggest a moderate probability (about 55%) of La Niña conditions developing in the central to eastern equatorial Pacific from December 2024 to February 2025 and from January to March 2025, while the chances of ENSO-neutral conditions are estimated at 45% for the same periods. Should La Niña develop, as is slightly favored by predictions, it is expected to be a short-lived event: the chance of La Niña during February-April 2025 decreasing to around 45%, and ENSO-neutral conditions becoming dominant at 55%. The chance of El Niño developing during this entire forecast period is negligible.

It is important to note that El Niño and La Niña are not the only factors that drive global and regional climate patterns, and further that the magnitudes of ENSO indicators do not directly correspond to the magnitudes of their effects. At the regional level, seasonal outlooks need to assess the relative effects of both the ENSO state and other locally relevant climate drivers. Regionally and locally applicable information is made available via regional and national seasonal climate outlooks, such as those produced by WMO Regional Climate Centres (RCCs), Regional Climate Outlook Forums (RCOFs) and National Meteorological and Hydrological Services (NMHSs).

In summary:

- The tropical Pacific has been in an ENSO-neutral state since May 2024; these ENSO-neutral conditions persist as of end-November 2024, with observed sea surface temperature anomalies remaining within the ENSO-neutral range.
- Model predictions and expert assessment indicate that La Niña is more likely than not to emerge during December 2024 to February 2025, with about a 55% chance. The chance of ENSO-neutral conditions continuing in that period is about 45%.
- If La Niña develops in the next couple of months, it may be relatively short-lived and the return of the ENSO-neutral conditions is favored during February-April 2025, with about 55% chance.
- The chances of El Niño developing can be practically ruled out for the next six months.

The state of ENSO will continue to be carefully monitored by WMO Members and partners. More detailed interpretations of the implications for regional climate variability will be carried out routinely by the climate forecasting community over the coming months and will be made available through the National Meteorological and Hydrological Services.

For web links of the National Meteorological Hydrological Services, please visit:

<https://public.wmo.int/en/about-us/members>

For the latest Global Seasonal Climate Update (GSCU) based on WMO Global Producing Centres of Long-Range Forecasts, please visit:

<https://www.wmolc.org/gscuBoard/list>

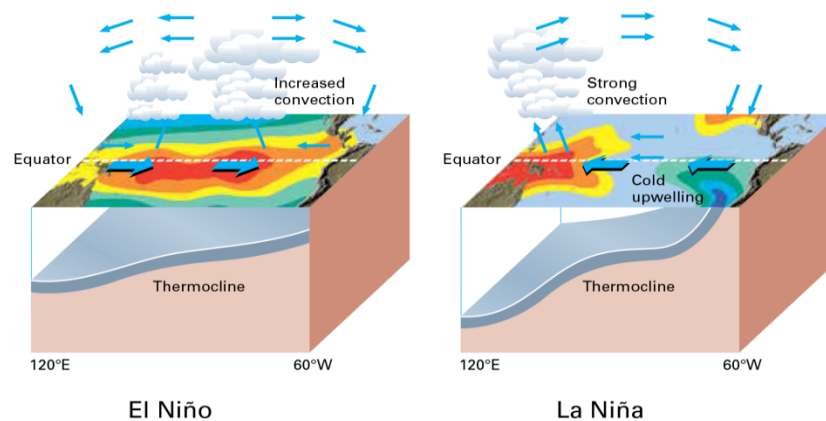
An archive of all WMO El Niño/La Niña Updates issued so far, including this one, is available at:

<https://community.wmo.int/activity-areas/climate/wmo-el-ninola-nina-updates>

Acknowledgements

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El Niño/La Niña Background



Typical circulation patterns during El Niño/La Niña (Source: WMO, 2003, “Climate into the 21st Century”).

Climate Patterns in the Pacific

Research conducted over recent decades has shed considerable light on the important role played by interactions between the atmosphere and ocean in the tropical belt of the Pacific Ocean in altering global weather and climate patterns. During El Niño events, sea surface temperatures in the central and eastern tropical Pacific Ocean become substantially warmer than normal. In contrast, during La Niña events, the sea surface temperatures in these regions become colder than normal. These temperature changes are strongly linked to major climate fluctuations around the globe and, once initiated, such events can last for 12 months or more. The strong El Niño event of 1997–1998 was followed by a prolonged La Niña phase that extended from mid-1998 to early 2001. El Niño/La Niña events change the likelihood of particular climate patterns around the globe, but the outcomes of each event are never exactly the same. Furthermore, while there is generally a relationship between the global impacts of an El Niño/La Niña event and its intensity, there is always potential for an event to generate serious impacts in some regions irrespective of its intensity.

Forecasting and Monitoring the El Niño/La Niña Phenomenon

The forecasting of Pacific Ocean developments is undertaken in a number of ways. Complex dynamical models project the evolution of the tropical Pacific Ocean from its currently observed state. Statistical forecast models can also capture some of the precursors of such developments. Expert analysis of the current situation adds further value, especially in interpreting the implications of the evolving situation below the ocean surface. All forecast methods try to incorporate the effects of ocean-atmosphere interactions within the climate system. The meteorological and oceanographic data that allow El Niño and La Niña episodes to be monitored and forecast are drawn from national and international observing systems. The exchange and processing of the data are carried out under programmes coordinated by the WMO.

WMO El Niño/La Niña Update

The WMO El Niño/La Niña Update is prepared on a quasi-regular basis (approximately every three months) through a collaborative effort between WMO and the International Research Institute for Climate and Society (IRI) as a contribution to the United Nations Inter-Agency Task Force on Natural Disaster Reduction. It is based on contributions from the leading centres around the world monitoring and predicting this phenomenon and expert consensus facilitated by WMO and IRI.

For more information on the Update and related aspects, please visit:

<https://public.wmo.int/en/our-mandate/climate/el-niñola-niña-update>