



El Niño/La Niña Update

Embargoed, 05 March 2024, 0600 GMT, 0700 CET

Current Situation and Outlook

The 2023-24 El Niño has peaked during November-January and is now gradually weakening. WMO Global Producing Centres of Long-Range Forecasts indicate around a 60% chance of El Niño conditions persisting during March-May 2024, and around a 40% chance of transitioning to ENSO-neutral conditions during March-May. El Niño conditions then become increasingly unlikely, and there is around 80% chance of ENSO-neutral conditions for April-June. A possible transition from ENSO-neutral to La Niña during June-August is suggested by some climate models, while the chance of El Niño persisting during June-August is low (around 10%). Due to the relatively low historical performance of long-range forecast models at this time of year, commonly known as the Northern Hemisphere "spring predictability barrier", these ENSO forecasts should be interpreted with caution. 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.

The current El Niño event reached its maximum intensity between November and January, as evidenced by the Niño 3.4 Index, displaying a peak value of about 2.0 °C above the 1991 to 2020 average for December 2023, according to the Optimum Interpolation Sea Surface Temperature (OISST) dataset. As of mid-February 2024, sea surface temperatures in the eastern and central tropical Pacific Ocean experienced a slight decline, measuring 1.5 °C above the long-term average for the week centered on 14 February 2024. This indicates the persistence of El Niño conditions, though gradually diminishing. Meanwhile, its impacts on global climate can be expected during the coming few months.

In the atmosphere, convective activity over the equatorial Pacific near the international date line continues to be above normal. The Southern Oscillation Index (SOI: defined by the standardized Tahiti minus Darwin sea-level pressure difference), which had shown a significant increase to briefly reach a slightly positive value in January 2024, has now returned to a negative value that is indicative of a continued El Niño event, although this negative value also partly reflects intra-seasonal variability due to the presence of Madden Julian Oscillation over western Pacific. Easterly winds in the lower troposphere (i.e. the trade winds) remain close to normal strength, while upper-level (200-hPa) winds show easterly anomalies across the central and east-central

equatorial Pacific. The warm sub-surface temperature anomalies have reduced, while at depths of 100 to 200 meters, cold sub-surface temperature anomalies have spread across the equatorial Pacific.

The WMO Global Producing Centres of Long-Range Forecasts routinely issue global-scale climate forecasts for the coming months. Based on their latest forecasts and expert assessments, there is around a 60% likelihood that the current above-average sea surface temperatures in the central and eastern equatorial Pacific will continue during March-May, while there is a 40% chance of transitioning to ENSO-neutral conditions. Subsequently, ENSO-neutral conditions are expected to dominate during the following two overlapping three-month periods: April-June (~80% chance) and May-July (~70% chance). While ENSO-neutral conditions are currently forecast to be the most likely outcome for the period around mid-year, the chance of La Niña gradually increases from ~10% in April-June to ~20% in May-July 2024. The chance of El Niño persisting into the boreal summer is around 10%. A possible transition from ENSO-neutral to La Niña during June-August is suggested by some climate models, however, it should be noted that due to the low performance of seasonal forecast models at this time of year, known as the Northern Hemisphere "spring predictability barrier", it is critical to interpret long-range ENSO forecasts with caution.

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:

- As of February 2024, both ocean and atmosphere over the tropical Pacific indicate the continued presence of El Niño conditions, although both atmospheric and oceanic indicators show a steady decline over recent months.
- Expert assessment of model forecasts indicates that the 2023-24 El Niño is expected to persist during March-May with around a 60% chance, while the chance of transitioning to ENSO-neutral conditions stands at 40%.
- ENSO-neutral conditions are anticipated to prevail during the subsequent two overlapping three month periods: April-June (~80% chance) and May-July (~70% chance).
- While ENSO-neutral conditions are currently forecast to be the most likely outcome for the period around mid-year, a possible transition from ENSO-neutral to La Niña is suggested by some climate models during June-August 2024.
- The chance of El Niño persisting into the boreal summer is low (around 10%).

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://wmo.int/about-wmo/wmo-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>

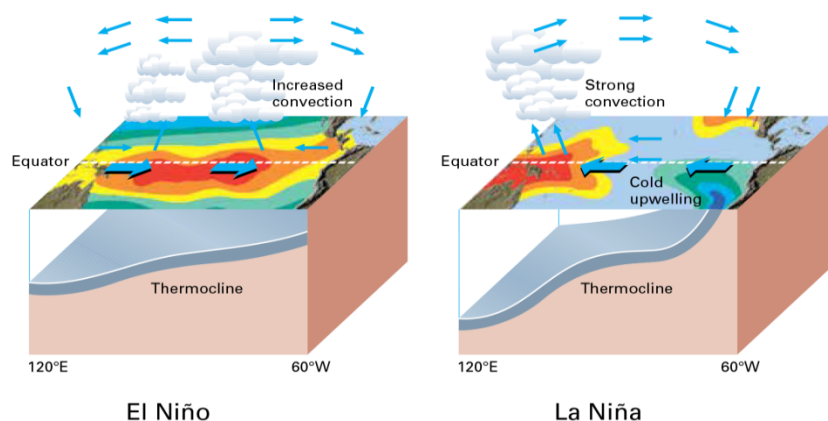
An archive of all WMO El Niño/La Niña Updates issued so far, including this one, is available at:

<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>