WEATHER CLIMATE WATER

WORLD METEOROLOGICAL ORGANIZATION

El Niño/La Niña Update

August 2024

Embargoed , 11 September 2024, 0600 GMT, 0800 CEST

Current Situation and Outlook

As of mid-August 2024, the tropical Pacific remains in a neutral state of the El Niño–Southern Oscillation (ENSO). The WMO Global Producing Centres of Long-Range Forecasts anticipate a possible transition to La Niña, with approximately a 55% chance in September-November, increasing to 60% during the subsequent three-month periods of October-December, November-January and December-February. The chance of ENSO neutral conditions persisting is estimated at 45% for September-November and 40% thereafter. The chance of El Niño developing during the forecast period is near zero. 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.

ENSO-neutral conditions (i.e., neither El Niño nor La Niña), were observed over the past three months. As of mid-August 2024, the equatorial Pacific Ocean continues to experience ENSO-neutral conditions. During the week centered on 14 August 2024, sea surface temperatures across the equatorial Pacific ranged between0.3 below and 0.6 degrees Celsius above normal. Over the past few months, cold subsurface temperatures have persisted in the eastern equatorial Pacific Ocean, extending to the surface. Negative subsurface temperature anomalies continue to be present at depth in the central Pacific Ocean, while slightly above-average temperatures are observed from the surface to a depth of 50 meters in the western and central Pacific. Overall, negative subsurface temperature anomalies have weakened since early August 2024. The overlying atmospheric conditions, including surface and upper-level winds and patterns of cloudiness and rainfall, remain broadly consistent with ENSO neutral conditions. The Equatorial Southern Oscillation Index (ESOI, a measure of the standardized Equatorial Pacific (80°W-130°W; 5°N-5°S) minus Indonesia (90°E-140°E; 5°N-5°S) sea-level pressure difference) was within ENSO-neutral range for the month of July 2024. The trade winds were close to average across the tropical Pacific, and normal atmospheric convection has been observed in the central Pacific. On the whole therefore, observed oceanic and atmospheric conditions currently indicate the existence of ENSO-neutral conditions.

Using the recent observations as the starting point for their dynamical seasonal prediction systems, the WMO Global Producing Centres of Long-Range Forecasts routinely issue global-scale climate forecasts for the coming months. Their latest forecasts and expert assessment indicate that there is a moderate chance (55%) of La Niña conditions to develop during September-November 2024, with sea surface temperature anomalies in the central and eastern equatorial Pacific expected to reach between -0.5 and -1.0 degrees Celsius. The chance for ENSO-neutral is estimated to be 45%. La Niña continues to be favored with 60% chances during each of the periods October-December 2024, November 2024-January 2025, and December 2024-February 2025. The chances for ENSO-neutral conditions to continue during these periods are estimated at 40%, and those of El Niño developing are near zero during the entire forecast period. August is a time when seasonal forecasts of ENSO become more skillful. In summary, although La Niña has a modest chance of developing, some uncertainty remains as several model forecasts suggest that ENSO-neutral conditions could persist.

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 the ENSO state as well as other 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:

- ENSO-neutral conditions, which began in May 2024, have persisted through mid-August 2024, with current oceanic and atmospheric indicators remaining consistent with ENSO-neutral status.
- Climate models and expert assessment indicate a moderate chance (55%) for the onset of La Niña in September-November 2024 and 45% chance for ENSO-neutral conditions to continue.
- La Niña chance is forecasted to increase to 60% into the upcoming northern hemisphere winter 2024-25, which is higher than the 40% chance of ENSO-neutral conditions.
- There is virtually no chance of El Niño developing up to and including boreal winter 2024-25.

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:

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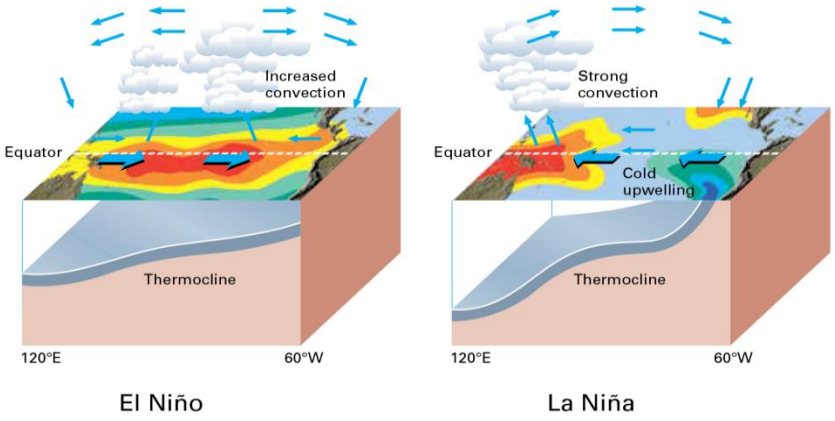
El Niño/La Niña Background



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 programs 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