

El Niño/La Niña Update

November 2022

Current Situation and Outlook

The protracted La Niña conditions, which began in September 2020, with a short break in 2021 boreal summer, are still continuing in the equatorial Pacific Ocean. WMO Global Producing Centres of Long-Range Forecasts predict the continuation of the current La Niña into the boreal winter of 2022/2023, with a 75% chance in December-February 2022/2023, and 60% in January-March 2023. Thereafter, transition of the current La Niña (a cold phase of the El Niño–Southern Oscillation or 'ENSO') to ENSO-neutral conditions is favored in February-April 2023 with a 55% chance, and increasing to about 70% during March-May. The chance of El Niño developing is negligible during boreal winter 2022/2023, slightly increasing after, but still with low chance, around 25% towards the end of the forecast period (May-July 2023). 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 protracted La Niña conditions, which began in September 2020, with a short break in June-August 2021 are still continuing in the equatorial Pacific Ocean as of mid-November 2022. The sea surface temperature anomalies in the central and eastern equatorial Pacific ranged from -0.9 to -1.4 degrees Celsius (for the week centered on 09 November 2022), with below-average subsurface temperatures in the eastern and east-central Pacific sustaining the cooler sea surface temperatures. The overlying atmospheric conditions, including surface and upper-level winds and patterns of cloudiness and rainfall, remain consistent with La Niña. The Southern Oscillation Index (SOI: defined by the standardized Tahiti minus Darwin sea-level pressure difference), which had shown a

significant increase in September, now has a downward trend. Anomalously dry conditions have been observed in the central Pacific (west of the International Date Line), with enhanced convection and precipitation over Indonesia and the western Pacific. On the whole, observed oceanic and atmospheric conditions indicate a continuation of the current La Niña event.

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 probability for the sea surface temperature anomalies in the central and eastern equatorial Pacific to remain colder than normal during next two overlapping seasons (December-February and January-March). The likelihood of a continuation of the current La Niña is forecasted to be about 75% for December-February 2022/2023, but to decrease to about 60% during January-March, and to 40% in February-April 2023. Termination of the multi-year La Niña, leading to ENSO-neutral conditions, is favored during February-April with a 55% chance. The probability increases to 70% during March-May. The chance of El Niño developing is negligible until later in boreal spring, increasing to around 25% by the end of the forecast period in May-July 2023.

With the current La Niña event entering its third consecutive year and predicted to continue until early 2023, this marks the first "triple-dip" La Niña event of the 21st century, which potentially has serious implications for protracted drought or flood conditions in the impacted regions. Concurrently, the Interdecadal Pacific Oscillation has been strongly in its negative phase since 2017 and strongly negative since 2020, which reinforces the La Niña phase of ENSO. However, 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 a La Niña state since September 2020 with a short break in June-August 2021; this La Niña situation is still continuing as of mid-November 2022, with La Niña event thresholds exceeded for both oceanic as well as atmospheric conditions.
- Model predictions and expert assessment indicate that La Niña is very likely to continue, with about a 75% probability, during December-February 2022/2023. The chance of ENSO-neutral is about 25% and for El Niño is near-zero. For January-March 2023, the probability for La Niña decreases to about 60%.
- Transition of the current La Niña to ENSO-neutral is favored during February-April 2023, with about a 55% chance of ENSO-neutral conditions in this period, increasing to about 70% during March-May.
- The chance of El Niño developing is negligible until later in boreal spring, increasing to around 25% during May-July 2023.

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 information and web links to WMO Regional Climate Centres (RCCs) please visit:

<https://public.wmo.int/en/our-mandate/climate/regional-climate-centres>

For information and web links to Regional Climate Outlook Forums (RCOFs) please visit:

<https://public.wmo.int/en/our-mandate/climate/regional-climate-outlook-products>

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>

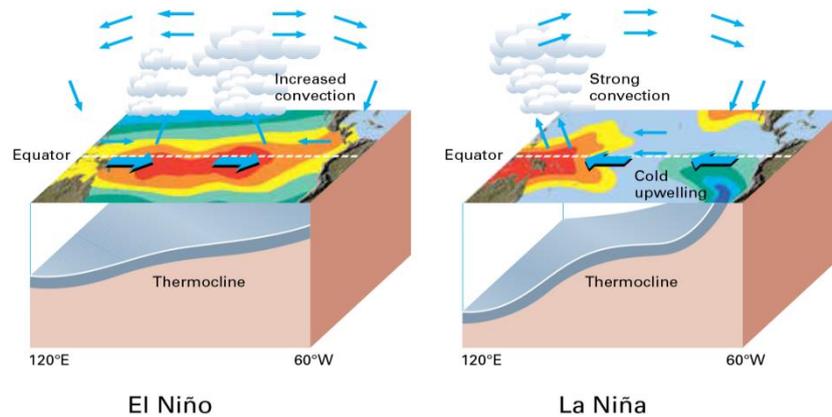
An archive of all WMO El Niño/La Niña Updates issued so far, including this one, is available at:

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

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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>