El Niño/La Niña Update

WEATHER CLIMATE WATER

WORLD METEOROLOGICAL ORGANIZATION

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Current Situation and Outlook

The La Niña that developed in the second half of 2021 remains active in the tropical Pacific, although there are indications of its weakening, in terms of both oceanic and atmospheric parameters. The latest forecasts from the WMO Global Producing Centres of Long-Range Forecasts indicate a moderate chance (about 65%) of the current La Niña conditions continuing during March-May 2022, and about a 35% chance of their further weakening to El Niño/Southern Oscillation (ENSO)-neutral conditions. The La Niña event is forecast to dissipate thereafter, with ENSO-neutral becoming the most likely category from April-June onward (50-60% chance). National Meteorological and Hydrological Services (NMHSs) will closely monitor changes in the state of ENSO over the coming months and provide updated outlooks.

La Niña conditions, have persisted during October 2021 to February 2022, with below-average sea surface temperatures in the central and eastern equatorial Pacific Ocean and above-average sea surface temperatures in the western tropical Pacific Ocean. Below average sub-surface temperatures in the central and eastern equatorial Pacific during August to December 2021 provided a consistent supply of cooler water to the surface. However, this source started weakening in January 2022, and currently, subsurface temperature anomalies are positive over a large part of the equatorial Pacific (130E to 110W) at a depth of 100 to 200 m, while negative anomalies have contracted into the eastern Pacific (110 to 90 W) and are confined close to the surface. Currently, overlying atmospheric conditions, including surface and upper-level winds and patterns of cloudiness and rainfall, remain consistent with La Niña conditions. The Southern Oscillation Index (SOI) has remained positive in association with higher surface pressure over

Tahiti and lower surface pressure at Darwin. Anomalously dry conditions have been observed around the date line, while enhanced convection and precipitation were observed over Indonesia and the western Pacific. In summary, observed 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 with moderate probability (about 65%) that the sea surface temperature anomalies in the central and eastern equatorial Pacific will remain below -0.5 degrees Celsius during March-May 2022, indicative of borderline La Niña conditions, before returning to ENSO-neutral levels thereafter. The probability for ENSO-neutral conditions is estimated at around 35% during March-May season, and the chance of El Niño developing is near-zero. The probability for a transition from La Niña to ENSO-neutral condition to occur during April-June 2022 is estimated to be about 50-60%. However, the chances for La Niña continuation or transitioning to ENSO-neutral during approaching seasons varies between the different forecasting models, given a higher level of uncertainty during these forecast periods associated with the spring predictability barrier.

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 current La Niña event continues to prevail, with below-average sea surface temperatures (-0.5 to -1.0 degrees Celsius) in the central-eastern equatorial Pacific. Atmospheric conditions also remain consistent with a La Niña.
- Model predictions and expert assessment indicate about a 65% chance for the continuation of the La Niña during the March-May 2022 season, the probability for ENSO-neutral conditions is estimated at around 35%.

- The odds for La Niña continue to drop to 40-50% during the April-June 2022 season, with ENSO-neutral becoming the most likely category (50-60% chance).

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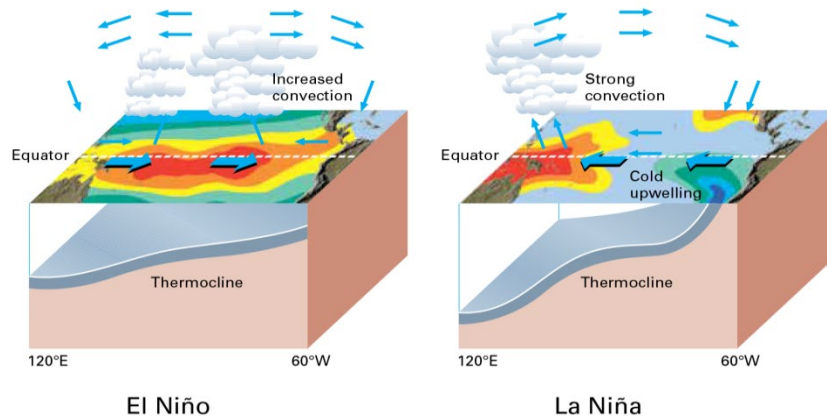https://www.wmolc.org/gscuBoard/list

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

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