



# El Niño/La Niña Update

February 2020

## Current Situation and Outlook

**Since July 2019 sea surface temperatures in the tropical Pacific have been neutral with respect to the El Niño-Southern Oscillation (signifying that neither El Niño nor La Niña have prevailed). Since October, sea surface temperatures intermittently warmed towards the threshold of El Niño levels, but at least half of the key tropical Pacific atmospheric indicators have remained neutral during these recent months. WMO Global Producing Centers of Long Range Forecasts (GPCs-LRF) indicate that sea surface temperatures are most likely to cool and return towards average conditions after March, and remain at ENSO-neutral levels into the third quarter of 2020. Given current conditions and model predictions, the chance of ENSO-neutral conditions to prevail during March-May 2020 is estimated to be at 60%, while chances for El Niño and La Niña conditions to occur are 35% and 5%, respectively, in the same period. National Meteorological and Hydrological Services will continue to closely monitor changes in the state of El Niño/Southern Oscillation (ENSO) over the coming months and provide updated outlooks, taking into account the increased uncertainty in long-range forecasts at this time of the year.**

Since July 2019, the tropical Pacific sea surface temperatures have mostly remained at ENSO-neutral levels (i.e., neither El Niño nor La Niña conditions were considered to have occurred), though briefly approaching El Niño thresholds in October-November 2019, and again in January 2020. On the whole, ENSO-neutral conditions are considered to have prevailed as evidenced by atmospheric indicators such as the patterns of low-level winds and cloudiness and rainfall across the tropical Pacific. Since October, intermittent episodes of weakening of the trade winds have occurred, including episodes in January and February 2020, but these relatively short-lived departures from average have not been accompanied by the typical El Niño patterns in other key atmospheric indicators such as upper-level winds and cloudiness and rainfall patterns. Although there has been a recent increase in cloudiness and rainfall near the International Date Line, it has been weak and is not expected to persist beyond March. Recent patterns of sea level pressure across the tropical Pacific Ocean have also been suggestive of ENSO-neutral conditions. Sub-surface water temperatures in the eastern

tropical Pacific, which have alternated between near-average and somewhat above average since July 2019, have been above-average since late January 2020, indicating that above-average sea surface temperatures may continue at least into March.

Currently, sea surface temperatures in the east-central tropical Pacific Ocean are slightly above average but within the range of ENSO-neutral conditions. Temperatures near the International Date Line and in the west-central tropical Pacific are farther above average, while temperatures farther east are closer to average or even slightly below average. Upper level winds across the basin are near-average, accompanied by a pattern of slightly above-average cloudiness and rainfall near the International Date Line and below-average cloudiness and rainfall over Indonesia. However, the continuing dryness over Indonesia may be related to the residual effects of the 2019 positive Indian Ocean Dipole. Overall, considering the temperature of waters at and below the surface, and the patterns of winds and cloudiness across the tropical Pacific, a continuation of an ENSO-neutral state is favored for at least the coming several months, notwithstanding the fact that recent sea surface temperatures and trade winds have intermittently leaned towards weak El Niño conditions.

About three-quarters of the ensemble mean forecasts from WMO GPCs-LRF predict sea surface temperatures to continue at neutral to slightly warm levels (ranging from near-average to 0.6 degrees Celsius above average in the east-central tropical Pacific) for the March-May period. About three-quarters of the models also predict continuation of neutral conditions through June-August 2020 (sea surface temperatures ranging from 0.4 degrees Celsius below average to 0.4 degrees Celsius above average). For the March-May season, most of the models that do not forecast ENSO-neutral conditions are forecasting weak El Niño conditions. On the other hand, for the June-August season, the models that do not forecast ENSO-neutral are approximately equally divided between those forecasting weak El Niño conditions and those forecasting weak La Niña conditions. Based on the model predictions and expert assessment, the likelihood for ENSO-neutral conditions to continue is estimated to be about 60% for the March-May 2020 season, with the likelihood of El Niño to occur at 35%, and that for La Niña to occur at 5%. For the June-August 2020 season the likelihood of maintaining ENSO-neutral drops slightly to 55%, while that for either El Niño or La Niña development is 20% to 25%. These longer-range forecasts have greater uncertainty with the approach of the boreal spring season, the so-called "spring predictability barrier", past which skillful predictions are known to become more difficult, causing the forecast probabilities to show less confidence.

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 strength of ENSO does not automatically correspond to the strength of its effects. At the regional level, seasonal outlooks need to assess the relative effects of both the ENSO state and other locally relevant climate drivers. For example, sea surface temperatures over the Indian Ocean, the southeastern Pacific Ocean and the Tropical Atlantic Ocean are also known to influence the climate in the adjacent land areas. In particular, the positive Indian Ocean Dipole of 2019 may continue to have some residual regional impacts for another month or two. Regionally and locally applicable information is 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:

- Since July 2019, the tropical Pacific has been in an ENSO-neutral state. Recently, some warming of the sea surface waters towards El Niño thresholds has been observed, but this warming has not reached El Niño thresholds and is not expected to last for more than one to two months.
- Model predictions and expert opinion indicate a 60% chance of ENSO-neutral conditions continuing during March-May 2020, while the probability for El Niño is near 35%. For the June-August 2020 season, the chance for ENSO-neutral is 55%, that for El Niño is 20-25% and that for La Niña is also 20-25%.
- Sea surface temperature anomalies in the east-central Pacific Ocean are most likely to be in the range from 0.0 to 0.6 degrees Celsius above average during March-May 2020.

The state of ENSO will continue to be carefully monitored. More detailed interpretations of regional climate variability will be generated routinely by the climate forecasting community over the coming months and will be made available through 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 please visit:

<http://www.wmo.int/pages/prog/wcp/wcasp/RCCs.html>

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 forecast based on WMO Global Producing Centres of Long Range Forecasts, please visit:

<http://www.wmo.int/pages/prog/wcp/wcasp/LC-LRFMME/index.php>

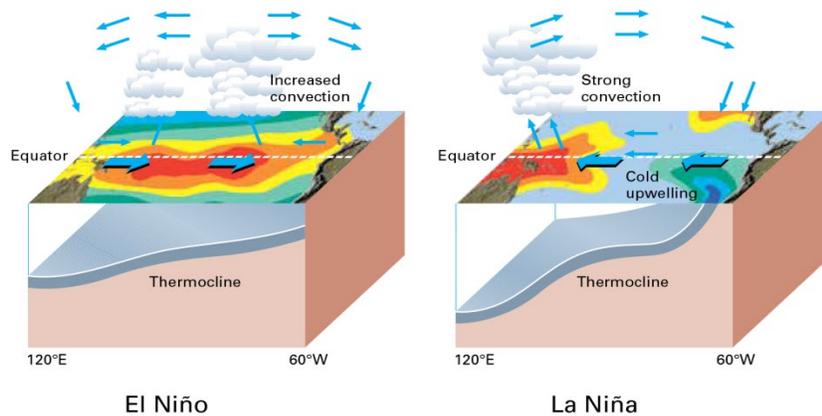
An archive of all WMO El Niño/La Niña Updates issued so far, including this one, is available at:

[http://www.wmo.int/pages/prog/wcp/wcasp/enso\\_updates.html](http://www.wmo.int/pages/prog/wcp/wcasp/enso_updates.html)

## Acknowledgements

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## El Niño/La Niña Background



Typical circulation patterns during El Niño/La Niña (Source: WMO, 2003, "Climate into the 21<sup>st</sup> 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>