



El Niño/La Niña Update

May 2020

Current Situation and Outlook

Sea surface temperature conditions in the tropical Pacific remain neutral in terms of El Niño-Southern Oscillation (ENSO) status, signifying that neither El Niño nor La Niña is currently prevailing. Recent cooling of the sub-surface waters in the region has subsequently caused the hitherto slightly above-average sea surface temperatures to return to near-average levels during May. The latest seasonal forecasts from the WMO Global Producing Centers of Long Range Forecasts (GPCs-LRF) indicate that tropical Pacific sea surface temperatures are likely to cool further, potentially approaching weak La Niña levels during the second half of 2020. Given current conditions and model predictions, the chance of ENSO-neutral conditions continuing through June-August 2020 is estimated to be around 60%, with a 30% chance of La Niña. Chances for La Niña rise to 40% for the September-November period. National Meteorological and Hydrological Services will closely monitor changes in the state of ENSO over the coming months and provide updated outlooks, taking into account the relatively greater uncertainty in seasonal forecasts at this time of the year.

Between October 2019 and early May 2020, tropical Pacific sea surface temperatures were near-to-above average. Atmospheric indicators were also generally at ENSO-neutral levels, including patterns of low-level winds, atmospheric pressure, and cloudiness and rainfall across the tropical Pacific. Sub-surface water temperatures in the eastern tropical Pacific were mainly above average from July 2019 to March 2020, returned to average during April, and then became somewhat below average in May. This recent cooling of deeper waters has been accompanied by slightly enhanced trade winds. These changes suggest that the approximate 6-month period of

slightly warmer-than-average sea surface temperatures has ended, and that additional cooling in sea surface temperature is possible.

Currently, sea surface temperatures in the east-central tropical Pacific Ocean are near average, suggestive of ENSO-neutral conditions. Temperatures near the International Date Line and in the west-central tropical Pacific still remain above average, while temperatures in the eastern two-thirds of the equatorial Pacific are slightly below average. A pattern of slightly below-average cloudiness and rainfall near and east of the International Date Line is currently observed, while cloudiness and rainfall are near-average over Indonesia. These patterns suggest that a continuation of an ENSO-neutral state is likely for at least the coming two months, with the possibility that below-average sea surface temperatures could develop during the second half of 2020.

These recent changes are integrated into the climate models from the WMO GPCs-LRF to produce forecasts for the coming months. About two-thirds of models predict mean sea surface temperatures to continue at neutral levels, and those models that are not predicting an ENSO-neutral state generally favour weak La Niña conditions for the June-August period. In the east-central tropical Pacific, sea surface temperature departures from average are most likely to be in the range of -0.6 to +0.3 degrees Celsius. For September-November, slightly over one-half of the models predict continuation of neutral conditions and the tilt towards La Niña becomes stronger, with sea surface temperature departures for this later season most likely to be in the range of -0.9 to +0.1 degrees Celsius.

Based on the model predictions and expert assessment, the likelihood for ENSO-neutral conditions to continue during the June-August 2020 season is estimated to be about 60%, with the likelihood of La Niña at 30% and El Niño at only 10%. For the September-November season the likelihood of maintaining ENSO-neutral conditions drops to 50%, while the likelihood for La Niña development is 40% and that for El Niño remains low at 10%. The forecasts for both of the seasons have notable uncertainty, as we are still in the second half of the so-called “predictability barrier”, during which seasonal outlooks are known to have lower accuracy, causing the forecast probabilities to be modest in terms of magnitude as a result of the relatively low level of confidence. On the whole, for both forecast lead times, the probabilities emphasize a relatively higher likelihood that ENSO-neutral conditions will continue, with the alternative being markedly higher odds for La Niña development rather than El Niño development.

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. 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:

- The tropical Pacific has been ENSO-neutral since July 2019. Near-to-above-average sea surface temperatures were observed from October 2019 until April 2020, after which temperatures returned to near-average levels.
- Current observations show below-average sub-surface water temperatures in the tropical Pacific, suggesting a likely tendency towards further decreases in sea surface temperature, with some chance of approaching La Niña thresholds during the second half of 2020.
- Model predictions and expert opinion indicate a 60% chance of ENSO-neutral conditions continuing during June-August 2020, while that for La Niña is 30% and for El Niño is 10%. For the September-November 2020 season, the chance for ENSO-neutral is 50%, and that for La Niña is 40% and for El Niño is 10%.
- Sea surface temperature departures from the average in the east-central Pacific Ocean are most likely to be in the range from -0.6 to +0.3 degrees Celsius during June-August 2020, and from -0.9 to +0.1 degrees during September-November 2020.

The state of ENSO will continue to be carefully monitored. 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 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:

<https://community.wmo.int/global-producing-centres-long-range-forecasts>

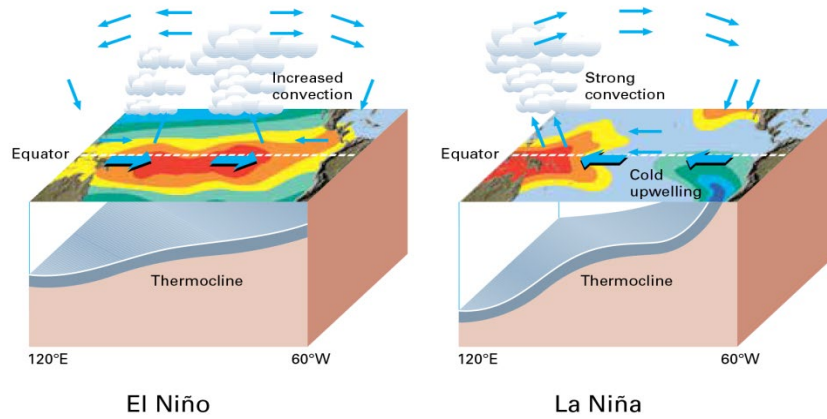
An archive of all WMO El Niño/La Niña Updates issued so far, including this one, is available at:

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

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>