



El Niño/La Niña Update

August 2022

Current Situation and Outlook

La Niña conditions in the tropical Pacific have persisted and strengthened as trade winds intensified during mid-July to mid-August 2022. It is likely that these conditions will continue at least for the remainder of 2022, becoming the first "triple-dip" La Niña event of the 21st century. WMO Global Producing Centres of Long-Range Forecasts predict the continuation of the current La Niña over the next six months, with a 70% chance in September-November 2022 but gradually decreasing to 55% in December-February 2022/2023. The probability for the return to El Niño–Southern Oscillation (ENSO) neutral conditions is estimated to be around 30 to 40%, for the same periods, respectively. The chance of El Niño developing is near-zero in September-November increasing to very low (around 5%) towards the end of forecast period (December-February 2022/2023). 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 equatorial Pacific Ocean is still experiencing La Niña conditions (as of mid-August 2022). The sea surface temperatures ranged from -0.8 to -1.2 degrees Celsius (for the week centered on 17 August 2022), with below-average subsurface temperatures in the central-eastern 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) showed a sharp decline in early July 2022 but has remained above the threshold of La Niña and has even slightly picked up again since the beginning of August 2022.

Anomalously dry conditions have been observed in the central Pacific (west of International Date Line), with enhanced convection and precipitation over Indonesia and the western Pacific. On the whole, observed oceanic as well as 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 between -0.5 and -1.0 degree Celsius during next three overlapping seasons (September-November, October-December, and November-January). The likelihood of a continuation of the current La Niña is forecasted to be about 70% for September-November, but to decrease slightly to about 55% during December-February 2022-23. The probability for ENSO-neutral conditions during next six months is estimated to range from 30%, in September-November, to 40%, in December-February, and the chance of El Niño developing is near-zero to very low (around 5%) for the same periods, respectively. It is likely that the La Niña will persist through boreal winter 2022-23, making it the first "triple-dip" La Niña event spanning three consecutive years of the 21st century, and only the third since 1950.

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:

- Multi-year La Niña conditions that developed in September 2020 continue to prevail through to mid-August 2022.
- The oceanic as well as atmospheric components of the current La Niña have slightly strengthened, since mid-July 2022.
- Climate models and expert assessment indicate that La Niña is likely to continue during next-six months becoming the first "triple-dip" La Niña of the 21st century

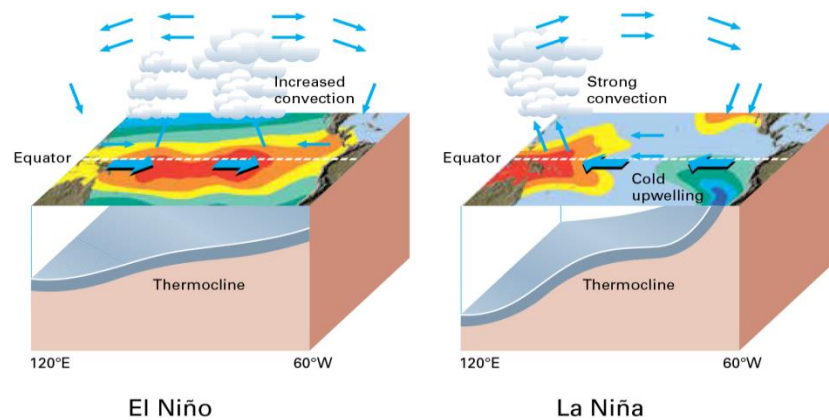
- There is about 70% chance for the continuation of the La Niña during the September-November 2022, 30% chance for ENSO-neutral and the chance of El Niño developing is near-zero.
- Continuation of the current La Niña into the coming boreal winter (December-February 2022/2023) is more likely than not (55%) and higher than the likelihood of ENSO-neutral (40%). The chance of El Niño developing is very low (around 5%).

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.

El Niño/La Niña Background

Acknowledgements

The WMO El Niño/La Niña Update is prepared through a collaborative effort between the WMO and the International Research Institute for Climate and Society (IRI), USA, and is based on contributions from experts worldwide, inter alia, of the following institutions: Australian Bureau of Meteorology (BoM), Centro Internacional para la Investigación del Fenómeno El Niño (CIIFEN), China Meteorological Administration (CMA), Climate Prediction Centre (CPC) and Pacific ENSO Applications Climate (PEAC) Services of the National Oceanic and Atmospheric Administration (NOAA) of the United States of America (USA), European Centre for Medium Range Weather Forecasts (ECMWF), Météo-France, India Meteorological Department (IMD), Indian Institute of Tropical Meteorology (IITM), International Monsoons Project Office (IMPO), Japan Meteorological Agency (JMA), Korea Meteorological Administration (KMA), Met Office of the United Kingdom, Meteorological Service Singapore (MSS), WMO Global Producing Centres of Long Range Forecasts (GPCs-LRF) including the Lead Centre for Long Range Forecast Multi-Model Ensemble (LC-LRFMME).



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>