

World Meteorological Organization



EL NIÑO/LA NIÑA UPDATE

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Current Situation and Outlook

Neutral El Niño/Southern Oscillation (ENSO) conditions currently exist in the tropical Pacific Ocean. However, in the far eastern tropical Pacific during February and March, strong ocean warming, combined with a collapse of the trade winds, resulted in localised severe impacts in Peru and adjacent countries. This strong warming event has now weakened. Most climate models surveyed indicate that basin-wide ENSO-neutral conditions will persist through April-June 2017, followed by a 50-60% chance of El Niño development in the subsequent months. The continuation of ENSO-neutral conditions is slightly less likely, while the emergence of La Niña appears remote. National Meteorological and Hydrological Services will continue to closely monitor changes in the state of ENSO over the coming months.

Following weak La Niña-like ENSO conditions during the second half of 2016, sea surface temperatures and most atmospheric fields have persisted at ENSO-neutral levels since January 2017. However, sea surface temperatures in the far eastern tropical Pacific Ocean increased to 2.0 degrees Celsius or more above average during February and March, creating localized heavy rainfall and a trade wind collapse from the Galapagos Islands to the coasts of Ecuador and Peru. This localized warming is distinct from the more broadly known El Niño warming pattern, and does not necessarily mean that a basin-wide El Niño event will develop later this year.

Currently, sea surface temperatures in the central tropical Pacific are close to average, but are accompanied by cloud patterns more typical of a La Niña-like state. The Niño 3.4 region in the east-central tropical Pacific Ocean has warmed to average to slightly above average temperatures during the last two months. The temperature of the waters at depth, from the central Pacific eastward and extending several hundred meters below the surface, have also been close to average; these waters often provide some indication of the coming conditions at the surface.

Most dynamical and statistical prediction models surveyed predict that sea surface temperatures in the east-central tropical Pacific Ocean over the next two months will warm, but remain neutral. Beyond May, models suggest a variety of possible scenarios, ranging from neutral conditions to a moderate El Niño, but overall favor El Niño development. Average dynamical model predictions indicate sea surface temperatures in the east-central tropical Pacific peaking at about 1.0 to 1.2 degrees Celsius above average during the third and fourth quarters of 2017, while the average for the statistical models is about 0.5 to 0.7 degrees Celsius above average. It should be kept in mind that predictions of ENSO for the second half of the year, made before May or June, typically have less certainty than outlooks made later in the year. Based on these predictions and expert assessment, the chance of El Niño developing in the second half of 2017 is in the range of 50-60%, with the likelihood of ENSO-neutral somewhat lower at around 40%. There is very little chance of La Niña during 2017.

A careful watch will be maintained on the oceanic and atmospheric conditions in the tropical Pacific Ocean in the coming months to assess the possible transition to El Niño.

It is important to note that El Niño and La Niña are not the only factors that drive global climate patterns, and 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 El Niño/Southern Oscillation state and other locally relevant climate drivers. For example, sea surface temperatures of the Indian Ocean, the southeastern Pacific Ocean and the Tropical Atlantic Ocean are also known to influence the climate in the adjacent land areas. 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:

- ENSO-neutral conditions are currently in place;
- A strong sea surface temperature warming and trade wind collapse occurred in the far eastern tropical Pacific Ocean during February and March, producing heavy rainfall in coastal Peru and adjacent countries;
- Models surveyed and expert opinion suggest ENSO-neutral conditions are likely to continue through most of the second quarter of 2017, with some possibility of El Niño development around the middle of the year;
- Models and expert opinion suggest chances for El Niño have increased and are in the range of 50-60% during the second half of 2017; ENSO-neutral conditions are the next most likely scenario, with only a very small chance for La Niña.
- Longer-range ENSO forecasts issued prior to June for the second half of the year have less certainty than those issued in the second half of the year.

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>

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

El Niño/La Niña Background

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, for example, sea temperatures at the surface 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 World Meteorological Organization (WMO).

WMO El Niño/La Niña Update

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:

http://www.wmo.int/pages/prog/wcp/wcasp/wcasp_home_en.html

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