WEATHER CLIMATE WATER

WORLD METEOROLOGICAL ORGANIZATION

El Niño/La Niña Update

June 2018

Current Situation and Outlook

Sea surface temperatures in the east-central tropical Pacific as well as most of the overlying atmospheric indicators suggest that ENSO-neutral conditions are prevailing; that is, neither El Niño nor La Niña. Most dynamical and statistical forecast models suggest a continuation of the neutral conditions into the third quarter of 2018. Many models further indicate this period to be marked by a gradual warming of the tropical Pacific, eventually reaching a possible weak El Niño level by the fourth quarter of the year. However, such long-lead ENSO forecasts have substantial uncertainty, mainly related to the fact that forecasts going through the March-June period have lower confidence than those made in the second half of the year. National Meteorological and Hydrological Services will continue to closely monitor changes in the state of ENSO over the coming months.

Since late April 2018, sea surface temperatures across much of the east-central tropical Pacific returned to neutral levels following the La Niña of 2017-18. Most of the main atmospheric indicators have also returned to neutral, including the trade winds and the patterns of sea level pressure. The distribution of cloudiness and precipitation, however, suggests a lingering pattern of the La Niña that recently ended, with below-average cloudiness in the central tropical Pacific and near to above-average cloudiness and rainfall in the vicinity of Indonesia.

The temperature of the waters at depth, from the central Pacific eastward and extending several hundred meters below the surface, has become moderately above average since early April 2018. The waters at depth often provide an indication of the coming ENSO conditions at the surface, and together with the return of most atmospheric indices to neutral levels, suggest that the currently neutral sea surface temperatures may warm during the third and fourth quarters of 2018, with the possibility of reaching El Niño levels by the fourth quarter.

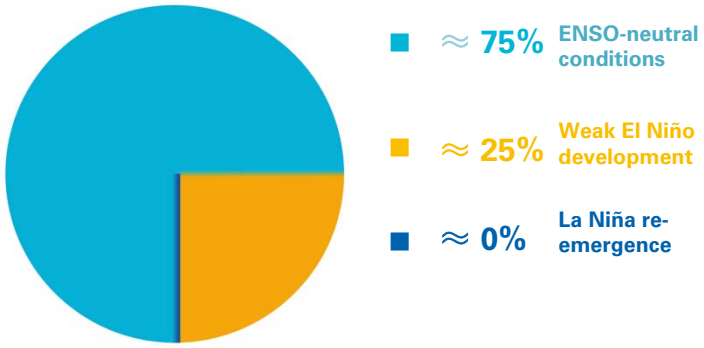
Most models surveyed predict that sea surface temperatures in the east-central tropical Pacific Ocean will remain neutral (between 0.5 degrees Celsius below average and 0.5 degrees above average) over the coming few months (June to August). More than half of the models predict a warming to weak El Niño levels beginning late in the third or the fourth quarter. However, uncertainty about the ENSO condition beyond the middle of the year is still significant, as forecasts whose lead time passes through the March-June period are known to have relatively lower confidence than forecasts not traversing that period. Based on the model predictions and expert assessment, the chance of neutral conditions continuing through

August of 2018 is about 75%. While there is a small chance of El Niño development, re-emergence of La Niña can be practically ruled out. For September through the end of the year, the probability for the development of El Niño is slightly above average, the likelihood for El Niño during the fourth quarter being about 50% at this time. If the models continue with the same predictions for the next two months, confidence concerning the likelihood of significant El Niño development will increase.

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

ESTIMATED PROBABILITIES
FOR THE THIRD QUARTER OF 2018



- The La Niña of 2017-18 ended in April 2018, and conditions in the ocean and atmosphere in the tropical Pacific have mostly returned to neutral;
- Model predictions and expert opinion indicate that El Niño/Southern Oscillation conditions are about 75% likely to remain neutral through August of 2018;
- Through August, while there is a small chance of El Niño development, the re-emergence of La Niña can be practically ruled out;
- While more than half of the models surveyed predict the development of weak El Niño later in 2018, these predictions are subject to a high level of uncertainty characteristic of long-lead forecasts made at this time of 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

Acknowledgements

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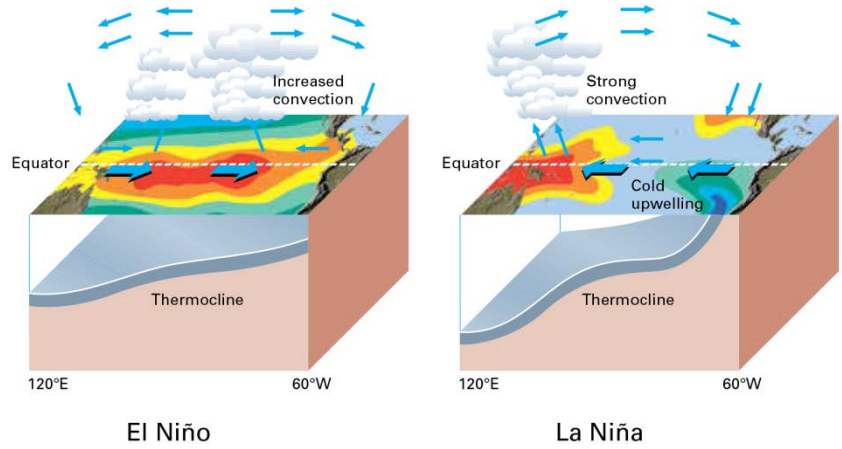
El Niño/La Niña Background



Typical circulation patterns during El Niño/La Niña (Source: WMO, El Niño/Southern Oscillation)

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