



# El Niño/La Niña Update

December 2017

## Current Situation and Outlook

**Sea surface temperatures in the eastern tropical Pacific Ocean have recently cooled to weak La Niña levels. Similarly, most atmospheric indicators are now consistent with the early stages of a La Niña event. Climate models indicate that weak La Niña conditions are likely to persist into the first quarter of 2018. A return to ENSO-neutral conditions before early 2018 is less likely, while the emergence of El Niño before the second quarter of 2018 appears very remote. National Meteorological and Hydrological Services will continue to closely monitor changes in the state of ENSO over the coming months.**

Since October, sea surface temperatures across much of the tropical Pacific have shifted from neutral to weak La Niña levels, with temperatures of 0.5 to 1.0 degrees Celsius below average in the east-central part of the basin. Atmospheric indicators also show La Niña patterns, including enhanced precipitation over the far western Pacific and an area of reduced rainfall near the International Date Line. Additionally, enhanced trade winds are observed in the western tropical Pacific and sea level pressures are higher than normal in the eastern Pacific and lower than normal in the west – both indicative of La Niña conditions.

In central to eastern Pacific, waters at depth have remained moderately cooler than average since October and extend several hundred meters below the surface. These waters, which often provide an indication of the coming conditions at the surface, do not suggest any warming of the cooler-than-average sea surface temperatures during December and into January.

Most models surveyed predict that sea surface temperatures in the east-central tropical Pacific Ocean may experience some additional cooling over the next two months, but will remain in the weak La Niña range (0.5 to 1.0 degrees Celsius below average). A small number of models predict cooling to more than 1.0 degrees Celsius below average. Based on these predictions and expert assessment, the chance of La Niña continuing into the first quarter of 2018 is 70-80%. There is virtually no chance of El Niño developing before the second quarter of 2018.

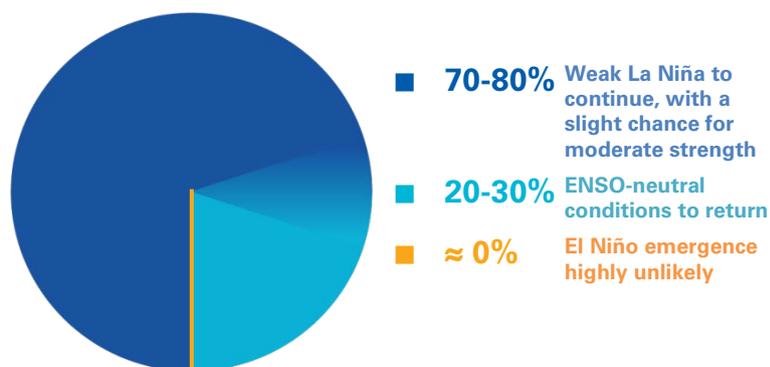
It is important to note that El Niño and La Niña are not the only factors that drive global climate patterns, and that the strength of ENSO does not automatically correspond to the strength of its effects. At the regional level, seasonal outlooks need to assess the relative effects of both the El Niño/Southern 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:

- Weak La Niña conditions have recently developed in both the sea surface temperatures and the associated key atmospheric patterns;
- La Niña conditions are 70-80% likely to continue into the first quarter of 2018.
- La Niña is likely to be weak (0.5 to 1.0 degrees Celsius below average), with a slight chance for moderate strength (1.0 to 1.5 degrees Celsius below average).

ESTIMATED PROBABILITIES  
FOR THE FIRST QUARTER OF 2018



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>

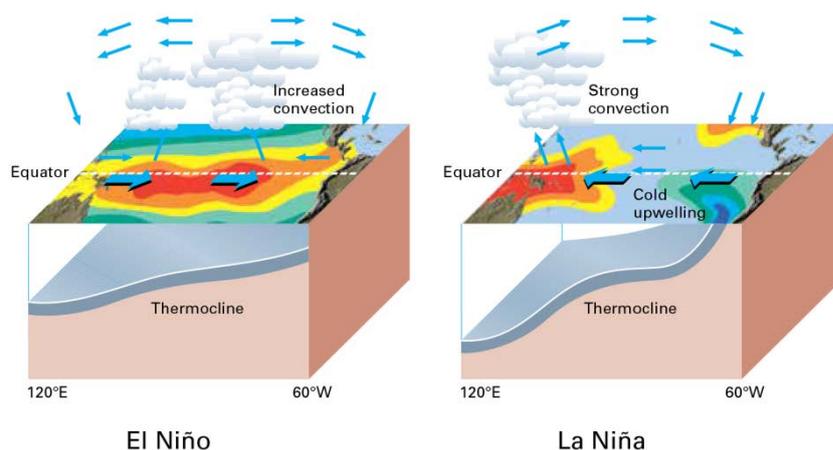
An archive of all WMO El Niño/La Niña Updates issued so far, including this one, is available at:

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