World Meteorological Organization

EL NIÑO/LA NIÑA UPDATE

Current Situation and Outlook

Sea surface temperatures in the eastern tropical Pacific Ocean have recently cooled to below normal and are approaching La Niña levels, while most atmospheric indicators have remained ENSO-neutral. Climate models surveyed indicate that weak La Niña conditions may develop along the central to eastern tropical Pacific in the last quarter of 2017, but then weaken to ENSO-neutral in the first quarter of 2018. La Niña conditions have a slightly higher likelihood than ENSO-neutral conditions for the coming few months, while the emergence of El Niño appears is highly unlikely. National Meteorological and Hydrological Services will continue to closely monitor changes in the state of ENSO over the coming months.

Since August, sea surface temperatures across much of the eastern equatorial Pacific have rapidly shifted from neutral to the threshold of a weak La Niña, near or just beyond one-half degree Celsius below average. However, atmospheric patterns mainly reflect only cool-neutral conditions, with enhanced rainfall over the Maritime Continent region, somewhat suppressed rainfall near the International Dateline, and weakly enhanced easterly low-level zonal wind anomalies across parts of the Pacific. Similarly, the pattern of sea level pressure, while leaning somewhat in the direction of La Niña, has remained in the ENSO-neutral range.

Currently, sea surface temperatures in the eastern tropical Pacific are slightly below average, with the strongest departures from average near one degree Celsius below average in the mid-eastern portion of the basin. If La Niña conditions continue to develop as many models predict, this pattern would expand farther westward toward

the Dateline, while the positive departures from average in the western Pacific would remain. Sub-surface temperatures, from the central Pacific eastward and extending several hundred meters below the surface, have cooled markedly to become somewhat below average in the recent month; these waters often provide some indication of the coming conditions at the surface. It is also noted that two consecutive years of La Niña following a strong El Niño, such as the one that occurred in 2015-16, is historically not uncommon.

Most dynamical models surveyed predict that sea surface temperatures in the east-central tropical Pacific Ocean will experience slight further cooling to weak La Niña conditions (0.5 to 1.0 degrees Celsius below average) over the next two months, with statistical models tending to favor maintaining only cool ENSO-neutral levels. The forecasted cooling persists at least until the end of the year and possibly into early 2018. Based on these predictions and expert assessment, the chance of a weak La Niña developing in the final months of 2017 is about 50-55%, with the likelihood of ENSO neutral at about 45-50%. There is very little chance of El Niño developing by 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 in 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:

- Sea surface temperatures in eastern tropical Pacific have recently cooled, approaching La Niña levels, while atmospheric patterns have largely remained ENSO-neutral;
- Models surveyed and expert opinion suggest that weak La Niña conditions may develop, with about 50-55% probability, in the final quarter of 2017;

- If La Niña conditions do develop before the end of 2017, they are likely to be weak, and would likely return to ENSO-neural in the first quarter of 2018;
- Continuation of ENSO-neutral conditions is also a plausible scenario, with 45-50% likelihood;
- Emergence of El Niño can be practically ruled out.

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

Acknowledgements