



World Meteorological Organization

EL NIÑO/LA NIÑA UPDATE

Current Situation and Outlook

Despite warming of the Tropical Pacific Ocean up until June, the overlaying atmosphere largely failed to respond. As a result, ocean temperature anomalies along the equator have decreased over the past two months. Changes in the wind patterns in early-August brought some weak re-warming, but winds have now returned to near normal in the western Pacific, while the pattern of cloudiness has remained largely neutral. Despite the recent observations, models and expert opinion suggest that the development of a weak El Niño event in the coming several months remains quite possible, with probability of at least 60%. National Meteorological and Hydrological Services and other agencies will continue to monitor Pacific Ocean conditions for further El Niño developments, and will assess the most likely local impacts.

August 2014 was the second month in a row that sea surface temperatures across much of the central and east-central tropical Pacific Ocean approached near normal conditions, after peaking at more than 0.5 degrees Celsius above normal during May and June. Despite the earlier oceanic warming, most atmospheric indicators (e.g., sea level pressure, cloudiness and trade winds) have remained near neutral levels, indicating that El Niño conditions had not become established. Notably, the heat below the surface of the tropical Pacific, which had been very much above average from March to May, returned to near-average levels during July and August. Additionally, the expected west-to-east difference in sea surface temperature anomaly has not appeared, with sea surface temperatures in the western tropical Pacific remaining above average. It is noted that while the basin-wide condition has behaved as described, the sea surface temperatures over the far eastern tropical Pacific have remained well above average since April.

However, the latest outlooks from climate models and expert opinion suggest that central tropical Pacific Ocean surface temperatures may warm again, potentially approaching El Niño levels during the coming three months. Atmospheric patterns associated with El Niño may accompany the warmed sea surface temperatures. The seasonal southward migration of the Intertropical Convergence Zone towards the equator may allow any further increases in sea surface temperatures to more easily increase cloudiness and rainfall in the central tropical Pacific, making ocean-atmospheric coupling more likely than in recent months.

International climate model outlooks collectively suggest 55% to 60% likelihood for El Niño to become established between September and November, rising as high as 70% for the November to February period. Although there remains a range of possibilities for the strength of the likely El Niño, a weak event appears likely, though a moderate strength event cannot be discounted. A

strong event appears most unlikely. The earlier that a coupling of any oceanic warming in the central tropical Pacific and the atmospheric patterns of weakened trade winds and cloudiness emerge, the greater the likelihood that the likely El Niño event will form and grow during the final months of 2014.

It is important to note that El Niño and La Niña are not the only factors that drive global climate patterns. At the regional level, seasonal outlooks need to assess the relative impacts of both the El Niño/La Niña state and other locally relevant climate drivers. For example, the state of the Indian Ocean Dipole, or the Tropical Atlantic SST Dipole, may impact the climate in the adjacent land areas. Locally applicable information is available via regional/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:

- Tropical Pacific Ocean surface temperature anomalies decreased during July and August after having reached around 0.5 degrees Celsius above normal in May and June. Atmospheric indicators have remained mainly neutral throughout the recent several months;
- As of mid-August 2014, model outlooks suggested up to a 60% chance that oceanic warming would exceed El Niño thresholds during the September to November period, peaking during the final months of 2014 and lasting into early 2015;
- Although a range of strength outcomes are possible, models surveyed and expert opinion favour a weak event, although a moderate strength event remains possible. A strong event appears unlikely.

The situation in the tropical Pacific and Indian Ocean 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 the National Meteorological and Hydrological Services. For web links of the National Meteorological Hydrological Services, please visit:

http://www.wmo.int/pages/members/members_en.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 once in 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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