



World Meteorological Organization

EL NIÑO/LA NIÑA UPDATE

Current Situation and Outlook

While tropical Pacific Ocean temperatures have recently reached weak El Niño thresholds, the overlying atmosphere remains neutral and hence an El Niño has not yet become fully established. However, atmospheric patterns that reinforce El Niño conditions are still likely to appear, with model forecasts and expert opinion suggesting continued warming of the Central and Eastern tropical Pacific Ocean during the coming months, peaking during the last quarter of 2014. While there remains a range of possibilities, models and expert opinion currently favour a moderate strength event over either weak or strong conditions. 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.

During June 2014, sea surface temperatures in much of the central and eastern tropical Pacific Ocean reached weak El Niño levels, and stronger El Niño levels in the far eastern part of the basin. Despite this oceanic warming, most atmospheric indicators (e.g., sea level pressure, cloudiness and trade winds) have remained at neutral levels, indicating El Niño conditions have not become fully established. A potential reason for the lack of atmospheric response may be that the sea surface temperatures are above average across virtually the entire tropical Pacific, not just in the eastern and central portions. This somewhat unusual pattern for a developing El Niño may be maintaining west to east temperature differences more typical of neutral conditions, hence limiting the atmospheric response to above normal temperatures in the central tropical Pacific Ocean. Despite this lack of a fully developed El Niño on the basin-wide scale, the far eastern tropical Pacific has already been experiencing significantly positive SST anomalies since May, causing above average rainfall along parts of the coast of equatorial South America.

The latest outlooks from climate models and expert opinion suggest that central tropical Pacific Ocean surface temperatures are likely to warm further into the third quarter of 2014, while the atmospheric anomaly patterns associated with El Niño are also expected to form and strengthen. The model and expert consensus is that the event will attain peak strength during the fourth quarter and endure into the first few months of 2015 before dissipating. Climate model outlooks suggest a 60% likelihood for El Niño to become established between June and August, rising to 75-80% for the October to December period. Although there remains a range of scenarios for the strength of the likely El Niño, a moderate strength event appears somewhat more likely than a weak or strong event, and a weak event slightly more likely than a strong event. The substantially above-average oceanic heat content beneath the sea surface of the central and particularly the

eastern tropical Pacific Ocean, triggered by strong westerly wind events earlier this year, suggests an event of significant strength. However, a delayed atmospheric response, and a potential lack of subsequent westerly wind events in the coming months, may limit the peak strength of the El Niño.

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:

- While the tropical Pacific Ocean surface temperatures have reached El Niño thresholds, and exceeded them in the far eastern portion of the basin, atmospheric indicators remain neutral, and hence an El Niño is not considered to have started;
- As of early June 2014, model outlooks indicate a continued warming of the central and eastern tropical Pacific Ocean surface through the third quarter of 2014, with peak strength expected during the fourth quarter;
- Climate models and expert opinion suggest a 75-80% chance of an El Niño becoming established by the October to December period;
- Although a range of outcomes remain, models surveyed and expert opinion currently favour a moderate strength El Niño, while a strong event appears somewhat less likely than it had appeared earlier in the year.

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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