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World Meteorological Organization

EL NIÑO/LA NIÑA UPDATE

Current Situation and Outlook

The tropical Pacific atmosphere and ocean are currently at moderate El Niño levels. The majority of international El-Niño Southern Oscillation (ENSO) climate models suggest that tropical Pacific temperatures are likely to continue warming, and possibly reach strong El Niño levels, in the coming months. However, model outlooks made at this time are not as accurate as those made during the second half of the year, and hence more confident estimates of event strength will be available after mid-year. National Meteorological and Hydrological Services and other agencies will continue to monitor the conditions over the tropical Pacific for further El Niño development and will assess the most likely local impacts.

As of late May, east-central tropical Pacific Ocean surface temperatures have ranged between +1.0° and +1.5° Celsius above average, indicating that the current El Niño is now at moderate strength. While sea surface temperatures in the tropical Pacific Ocean reached El Niño levels during late 2014, many of the atmospheric features of El Niño did not become significant until early 2015. The atmospheric indicators of El Niño have become more consistent during recent months with the 90-day Southern Oscillation Index near -1.0, indicating a coupling between the atmosphere and oceans with the event now maturing. For example, the typical El Niño pattern of cloudiness and rainfall in the vicinity of the dateline has become apparent, as has a weakening of the trade winds from the western to east-central Pacific. The cloudiness and rainfall indicator is important because it is considered essential in triggering El Niño's global climate impacts. Historically, a mature El Niño event is less likely to dissipate rapidly, and is likely to persist until early the following year.

During the last three months, temperatures below the surface of the tropical Pacific have been substantially above average in response to a weakening of the trade winds. This excess subsurface heat has the potential to maintain or strengthen the currently above average sea surface temperatures. Recently, some of this subsurface heat has risen to the surface, increasing sea surface temperatures, particularly along the immediate South American coast where temperatures warmed to at least +3.0° Celsius above average during May.

Currently, approximately two-thirds of the dynamical prediction models surveyed predict sea surface temperatures in the east-central tropical Pacific to exceed +1.5° Celsius above average between August and November. However, May and early June are known to be times of relatively high predictive uncertainty regarding the future development of the El Niño, and hence the peak strength of the event cannot be accurately determined at this time. Statistical models are currently predicting more conservative peak El Niño strength, characterized by east-central tropical Pacific sea surface temperatures ranging between 1.0° and 1.5° Celsius above average. Taking into account both types of models and their known performance characteristics, there is a high likelihood that the current above-average ocean temperatures will either be maintained or will increase further in the coming months in the east-central tropical Pacific. A careful watch will be maintained on the oceanic and atmospheric conditions over the tropical Pacific in the coming months to better assess the evolution of the strength of the event.

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, and the Pacific Decadal Oscillation may impact the climate in the adjacent land areas. The current and emerging oceanic-atmospheric conditions in the Western Indian Ocean indicate a likelihood of the Indian Ocean Dipole being positive during the coming months of the year. Regionally and 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:

- As of late May 2015, both the ocean and atmosphere over the tropical Pacific exhibit behaviour indicative of a moderate strength El Niño;
- A majority of the models surveyed and expert opinion suggest El Niño strengthening during the second half of 2015;

- Because ENSO forecasts made during the second quarter have lower accuracy than forecasts made later in the year, more confident estimates of this event's peak strength will become available after mid-year;
- It is unlikely that the current event will dissipate in the near future, and hence impacts are likely to be apparent for at least the next 3-6 months;
- El Niño events typically decay in the first quarter of the year following their formation.

The situation in the tropical Pacific 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

For information and web links to WMO Regional Climate Centres please visit:

http://www.wmo.int/pages/prog/wcp/wcasp/RCCs.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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