



World Meteorological Organization

EL NIÑO/LA NIÑA UPDATE

Current Situation and Outlook

Rapid changes in oceanic and atmospheric conditions in the tropical Pacific in recent months, and an increasing number of computer model predictions, are now pointing to a substantial likelihood of an El Niño event in the second half of 2009. However, surface climate conditions in the tropical Pacific are overall still considered near-neutral at this time. The situation therefore warrants especially careful monitoring over the next couple of months. Current assessments suggest that by the end of the third quarter of 2009, El Niño and near-neutral conditions are considered about equally likely outcomes across the tropical Pacific, with La Niña very unlikely. To place this in better context, El Niño typically occurs once every 4-5 years, so the current assessments translate to a substantially elevated risk of an El Niño developing later this year. This information, when expressed in terms of expected climate patterns, will be relevant to many climate-related risk management systems, and users are encouraged to seek detailed interpretations for their locations and sectors.

Since February 2009, sea surface temperatures along the Equatorial Pacific have warmed significantly, rising from about 1 Degree Celsius colder than normal to around 0.5 Degree Celsius above average. Furthermore, with substantially warmer than normal waters just beneath the surface of the ocean, most expert interpretation and dynamic prediction models consider the current situation favourable for El Niño development. Some uncertainty remains though, as the necessary ocean-atmosphere coupling which amplifies and maintains El Niño is not established yet.

Indeed, there are some features in the current climate of the tropical Pacific that continue to persist from the previous La Niña conditions, such as generally warmer than normal sea surface temperatures in the western Equatorial Pacific and, for much of the past three months, associated above average convection and cloudiness in much of the area. Eastward migration from the west Pacific of the convection and cloudiness is a major part of an El Niño phase. On the other hand, generally weaker trade winds, and more recently, surface pressure tendencies (as captured in the Southern Oscillation Index) suggest the final ingredients for El Niño development may be coming into place.

At this time, development of an El Niño event in the second half of 2009 is considered slightly more likely than not, i.e., above 50%, more than double its normal probability in

any given year (in the absence of other information) of around 20-25%, which equates to an event every 4-5 years on average. Many El Niño and La Niña events have their clearly visible origins in the March-June period, and trends at this time of year often provide good guidance to future conditions. There is a need, therefore, to be especially watchful over the next couple of months. While rapid El Niño development is increasingly possible, a more likely scenario based on model predictions is for any El Niño event to become established relatively slowly during the second half of 2009.

Computer models vary widely in their predictions on the likely strength of an El Niño development, but the situation is being watched carefully because most of the necessary preconditions for a substantial basin-wide event are generally considered to be in place. Sea-surface temperatures in the tropical Pacific are expected to be warmer than normal across the basin, even if there is some uncertainty on the establishment of a basin-wide El Niño event. Therefore, at least some impacts on climate patterns are expected from the emerging situation in the tropical Pacific. In considering risk management responses, it should be recalled that no two El Niño events are identical. Furthermore, the timing of impacts typically varies by region, with impacts in some regions likely even during the onset stages of an event.

Even in regions that are typically strongly impacted by El Niño, climate-risk assessments should not rely solely on El Niño/La Niña indications. Many climate extremes develop independently of El Niño and La Niña, and users should consult tailored regional and national climate outlooks. Such assessments integrate region-specific climate systems with the major global systems of El Niño and La Niña. Users should therefore consult their respective National Meteorological and Hydrological Services and regional climate institutions for more specific climate outlooks and follow-up updates.

In summary:

- Although current conditions are still near-neutral in the tropical Pacific, recent changes are consistent with the early stages of a developing El Niño event in the second half of 2009;
- By the end of the third quarter in 2009, while near-neutral conditions and El Niño are still considered approximately equally likely outcomes, this corresponds to roughly double the normal chances of an El Niño event occurring. La Niña is considered to be very unlikely for the remainder of 2009;
- Based on the above assessment, climate patterns typical of an El Niño event are considered to have increased chances of occurring through the remainder of the year. However, risk management strategies should recognize that more confident projections are expected in the next couple of months, which should more clearly prescribe whether El Niño or neutral conditions will prevail in the second half of 2009;
- Conditions need to be monitored carefully in the next couple of months, especially to determine if developments toward El Niño are accelerating, or if near-neutral conditions are becoming more firmly established.

The situation in the tropical Pacific will continue to be carefully monitored. More detailed interpretations of regional climate fluctuations 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 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 higher than normal. In contrast, during La Niña events, the sea surface temperatures in these regions become lower 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.

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