



World Meteorological Organization

EL NIÑO/LA NIÑA UPDATE

Current Situation and Outlook

El Niño conditions have become established over the tropical Pacific, and it is very likely that these will continue at least through the remainder of 2009 and probably into the first quarter of 2010. The ocean surface and subsurface in the central and eastern Equatorial Pacific has been substantially warmer than normal during June and July, supporting the development of an El Niño event. Atmospheric conditions across the tropical Pacific are increasingly showing patterns typical of a developing El Niño event. The development of a basin-wide El Niño has implications for the expected climate patterns in many parts of the world. This information is therefore relevant to many climate-related risk management systems, and users are encouraged to seek detailed interpretations for their locations and sectors.

During June and July, ocean conditions in the central and eastern Equatorial Pacific region strongly resembled the early stages of an El Niño event. In the region, sea surface temperatures had generally risen to between 0.5 and 1 Degree Celsius warmer than normal by the end of June, with similar levels maintained throughout July. Most models forecast the consolidation of an El Niño event over the coming months. Models give a wide range of possible event magnitudes, with sea surface temperatures in the central and eastern Equatorial Pacific typically expected to be in the range from 0.5 to 2 Degree Celsius warmer than normal during the remainder of 2009. The lower-to-middle end of the range is favoured by most expert interpretations, corresponding to a weak to moderate El Niño. Nonetheless, even a weak basin-wide El Niño event with sea surface temperatures of the order 0.5 Degree Celsius warmer than normal can have substantial impact on climate patterns in many parts of the world.

The warming in the central and eastern Equatorial Pacific is generally considered to be sufficiently well established such that the atmosphere will continue to engage on a large-scale and lead to a basin-wide El Niño event with duration of at least several months. Some atmospheric aspects in the tropical Pacific have been slow to engage, partly attributed to the continued warmer than normal sea surface temperatures in the western Equatorial Pacific. However, during July, wind changes and a cooling of ocean temperatures in the western Equatorial Pacific occurred, contributing to an atmospheric pattern that is now more consistent with, and supportive of, a basin-wide El Niño.

The expectation is for El Niño conditions to very likely prevail through the remainder of 2009 and into the first quarter of 2010. This expectation is based on model forecasts, and the typical life-cycle of El Niño events, which once established in the early-middle part of a year, usually persist through into the first quarter of the following year. Beyond the first

quarter of 2010, there is no information of substance on the likelihood of whether El Niño, near-neutral or La Niña will prevail in the tropical Pacific, and users are advised to assume the long-term climatological probability of occurrence.

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 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:

- Model forecasts and expert interpretation indicate that the ocean surface and sub-surface warmth observed during June and July in the central and eastern Equatorial Pacific is the early stage of a basin-wide El Niño event;
- A small caveat is that the atmospheric conditions over the tropical Pacific have been slow in forming classical El Niño climate patterns. However, the extent of the ocean warming and the atmospheric features through early August, make it very likely that the atmospheric pattern will continue to strengthen and reinforce the El Niño oceanic conditions;
- Based on model forecasts and the typical life-cycle of El Niño events, it is very likely that El Niño conditions will continue through the remainder of 2009, and probably into the first quarter of 2010. Beyond the first quarter of 2010, useful forecasts are not available. Therefore currently the best strategy is to assume that, beyond the first quarter of 2010, El Niño, near-neutral and La Niña have their long-term probability of occurrence;
- 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 and into the first quarter of 2010;
- In considering risk management strategies, it is important to always recognize that many unusual climate patterns and significant climate extremes occur independently of El Niño. Nonetheless, the presence of a basin-wide event does mean that many regional seasonal climate forecasts can be expected at this time to contain information with enhanced sharpness and value for many users. Therefore, this may be seen as a prudent time to review approaches to the incorporation of expectations about regional climate risks within broader risk management strategies.

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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