17 FEBRUARY 2009

World Meteorological Organization

EL NIÑO/LA NIÑA UPDATE

Current Situation and Outlook

Conditions resembling La Niña developed in December 2008, but they are already weakening and are not expected to herald a prolonged basin-wide La Niña event. Indeed, most assessments indicate that a transition back to neutral conditions is expected to occur over the next couple of months. One interpretation is that this has been a brief redevelopment of the La Niña event that prevailed through the latter part of 2007 and into the first half of 2008. Nonetheless, the La Niña-like conditions are having significant consequences for some current climate patterns, and impacts may continue in some regions over the next month or two. By March-May 2009, forecasts suggest that the most likely outcome is near-neutral conditions basin-wide across the tropical Pacific. The likelihood of El Niño or La Niña development through the remainder of 2009 is considered to be essentially unpredictable at this stage, with neither event considered more likely than the other.

During the second half of 2008, some atmospheric indicators across the tropical Pacific continued to show the signs expected during a La Niña event, yet Equatorial Pacific Ocean conditions were mostly neutral, leading to an overall assessment of basin-wide neutral conditions for the Pacific. However, unusually cold sea-surface temperatures developed in December 2008 in the central and eastern Equatorial Pacific, with temperatures more than 0.5 degrees Celsius below normal. The coupling of atmospheric wind patterns and the cooler than normal sea surface temperatures yielded a general assessment of La Niña conditions across the tropical Pacific for December 2008.

A sustained coupled development of La Niña conditions in the tropical Pacific ocean-atmosphere system would be highly unusual so late in the year, and in the recent 50-year historical record, has rarely or arguably never been the precursor of a multi-season La Niña event. Consistent with these historical experiences, current forecasts from dynamical and statistical models suggest that the current La Niña conditions will most likely dissipate over the next couple of months.

The redevelopment of La Niña conditions at the end of 2008 was also reflected in the western Pacific. Warmer than normal surface waters were present in equatorial latitudes, along with warmer than normal bands of sea surface temperature extending northeast and southeast into subtropical latitudes, consistent with a mature

La Niña situation. From this indicator, given the recent conditions across the Pacific, it would be sensible to expect over the next month or two a continuation of increased likelihood of the climate patterns associated with La Niña events.

However, interpretations of the current sub-surface Equatorial Pacific conditions and available tropical Pacific forecasts suggest the most likely outcome is for basin-wide near-neutral conditions being present by March-May 2009. For the remainder of the year, current forecasts are widely scattered, falling evenly across the range of possible outcomes in the historical record. Therefore, beyond March-May 2009, El Niño, near-neutral and La Niña should each be ascribed their long-term climatological likelihoods of occurrence.

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:

- Substantially cooler than normal sea surface temperatures became established during December 2008 in the central and eastern Equatorial Pacific;
- Considering the atmospheric indicators (such as the Southern Oscillation Index) in association with climate patterns in the western equatorial Pacific, the prevailing situation in December 2008 resembled La Niña conditions;
- The most likely outcome is for this to be a short-term coupling of the ocean and atmosphere across the tropical Pacific, and for neutral conditions to be re-established by March-May 2009;
- Some recent global climate patterns have been impacted by the La Niña-like conditions in the tropical Pacific. The impacts are expected to subside over the next couple of months, but a tendency for climate patterns consistent with La Niña may continue in some regions;
- Forecasts beyond March-May 2009 are very uncertain, such that climatological probabilities should be attached to basin-wide La Niña, near-neutral, and El Niño in the Equatorial Pacific.

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 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.

Acknowledgements

This El Niño/La Niña Update has been prepared through a collaborative effort between the World Meteorological Organization (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 has been prepared based on contributions from the African Centre of Meteorological Applications for Development (ACMAD), Asia-Pacific Economic Cooperation (APEC) Climate Centre (APCC), Australian Bureau of Meteorology (BoM), Australian Centre for Sustainable Catchments of the University of Southern Queensland, Centro Internacional para la Investigación del Fenómeno El Niño (CIIFEN), China Meteorological Administration (CMA), Climate Prediction Center (CPC) of the National Oceanic and Atmospheric Administration (NOAA) of the United States of America, Climate Variability and Predictability (CLIVAR) project of the World Climate Research Programme (WCRP), Comisión Permanente del Pacífico Sur (CPPS), European Centre for Medium Range Weather Forecasts (ECMWF), Fiji Meteorological Service, Météo-France, IGAD (Inter-Governmental Authority on Development) Climate Prediction and Applications Centre (ICPAC), Instituto Nacional de Meteorologia e Hidrologia (INAMHI) of Ecuador, International Research Institute for Climate and Society (IRI), Japan Meteorological Agency (JMA), Korea Meteorological Administration (KMA), Mauritius Meteorological Services (MMS), Met Office in the United Kingdom (UKMO), National Institute of Water and Atmospheric Research (NIWA) of New Zealand, and Wageningen University of The Netherlands.