



World Meteorological Organization

EL NIÑO/LA NIÑA UPDATE

Current Situation and Outlook

La Niña conditions prevailed through May 2008, but the event gradually weakened from its peak strength in February. The recent weeks have seen a more rapid decay, indicating a possible conclusion to the event. Even if some aspects of La Niña continue over the next few weeks, near neutral conditions are considered the most likely outcome for the middle part of the year and shortly thereafter. Rapid development of El Niño or re-development of La Niña is not considered likely for the middle part of the year. However, model forecasts and expert interpretation suggest that the pathway of the system is loosely constrained at this time, and there is need for careful monitoring over the coming weeks. For the second half of the year, the chance of an El Niño developing is small, but it cannot be ruled out. In such circumstances, near-neutral conditions should be considered the most likely outcome for the second half of 2008.

Sea surface temperatures in the central equatorial Pacific were about 1.5 degrees Celsius colder than normal over the period October 2007 to March 2008. This corresponds to a La Niña event with an intensity that lies in the middle-range of those observed in the historical record. In the first months of this La Niña event, the cool conditions extended across the eastern Equatorial Pacific to the South American coastline. From about February to April 2008, conditions close to the South American coastline actually became warmer than normal, with implications for locally surrounding climate. However, the large area of cool surface waters over the bulk of the central and eastern equatorial Pacific, combined with warmer than normal conditions in the equatorial western Pacific, represented typical La Niña forcing on the global atmosphere, with many climate patterns reflecting those normally observed during a La Niña event during these months, both in the vicinity of, and remote from, the tropical Pacific.

Between February and April 2008, a gradual weakening of the La Niña event occurred, and surface water more than 1 degree Celsius colder than normal covered an increasingly smaller area, confined more to the central equatorial Pacific. In recent weeks, a more rapid decay of the cool water has occurred, including both surface and sub-surface conditions. While some modest return of cooling is possible over the next few weeks, the main message from prediction models and expert interpretation is that near-neutral conditions should be considered the most likely

outcome for mid-year or shortly thereafter. However, interpretation of likely climate patterns over continental areas over the next couple of months is complicated because for some regions, weather patterns typical of La Niña may continue for a couple of months beyond the decay of the tropical Pacific cool waters. Therefore, users should consult detailed seasonal forecasts for regions of interest.

The March-June 2008 period is historically favoured for development of El Niño and La Niña events. Rapid development of such an event now appears unlikely through to the middle part of this year. A secondary maximum in historical statistics for event development is in the second half of the year, and forecasters are now turning to the question of whether there is any enhanced probability of such developments during the second half of 2008. Recent observations in the tropical Pacific indicate that warmer than normal waters are now in place beneath the surface of the equatorial Pacific. The extent to which this represents a sustained move of the coupled ocean-atmosphere system toward El Niño will become clearer in the coming months, which needs to be carefully monitored before any firm expectations will become possible. Overall, forecast models indicate a range of possible outcomes for the second half of 2008, generally favouring near-neutral conditions, but not ruling out the presence of either El Niño or La Niña, suggesting the system is not strongly constrained at this time. In such a situation, the most likely outcome for the second half of 2008 is considered to be near-neutral, but with close monitoring required for any firmer signs of future developments.

It is always important to recognize that other factors influence seasonal climatic patterns in addition to El Niño and La Niña. There is need for detailed regional evaluations of prevailing conditions, combining expected El Niño/La Niña influences with influences from other geographic regions as well, to arrive at the best estimates of the weather patterns to expect regionally and locally over the coming months. One noteworthy aspect is the current cooler than normal sea-surface temperatures in the eastern Indian Ocean close to the Indonesian coast. This requires careful monitoring, along with conditions in the tropical western Indian Ocean, for possible evolution of an Indian Ocean dipole structure, a phenomenon in the Indian Ocean that can strongly influence surrounding continental climate patterns. Locally applicable information should therefore be consulted in detailed regional/national seasonal climate outlooks, such as those produced by Regional Climate Outlook Forums (RCOFs) and National Meteorological and Hydrological Services (NMHSs).

In summary:

- A La Niña event of moderate intensity continued to prevail through the first quarter of 2008;
- A gradual weakening of the La Niña event since about February, has been followed by a rapid decline in recent weeks;
- Near-neutral conditions are considered the most likely outcome for mid-year 2008 and shortly thereafter;
- In considering expected climate over coming the months, it is important to recognize that atmospheric patterns typical of La Niña may continue in some regions for a couple of months after the decay of the cool waters in the tropical Pacific. Detailed seasonal forecasts should be consulted with this in mind;

- There are no clear indications for enhanced likelihood of El Niño or La Niña in the second half of 2008 and the system is considered to be quite sensitive at this time. While some recent observations and model forecasts hint that conditions favourable for El Niño may be starting to emerge, such a tendency is not firmly established. In such circumstances, near-neutral conditions are currently considered the most likely outcome for the second half of 2008.

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, India Meteorological Department (IMD), Indian Institute of Science (IISc), IGAD (Inter-Governmental Authority on Development) Climate Prediction and Applications Centre (ICPAC), Instituto Nacional de Meteorología e Hidrología (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 Center for Atmospheric Research (NCAR) of the United States of America, National Institute of Water and Atmospheric Research (NIWA) of New Zealand, Southern African Development Community Drought Monitoring Centre (SADC-DMC) and Wageningen University of The Netherlands.