



World Meteorological Organization

EL NIÑO/LA NIÑA UPDATE

Current Situation and Outlook

A significant La Niña episode continues in the tropical Pacific Ocean, with effects extending into adjacent ocean basins. Atmospheric indicators show this episode to be one of the strongest of the last century, while oceanic indicators have been at moderate to strong levels. La Niña conditions are likely to continue through the first quarter of 2011. While many recent regional climate impacts are consistent with the impacts typically associated with La Niña, some differ, and may continue to differ. For management of climate-related risks during this event, it is important to consult regional climate information and seasonal outlooks that account for both the prevailing La Niña conditions and other factors with potential influence on the local climate.

Moderate to strong La Niña conditions have continued since August 2010, with sea surface temperatures averaging around 1.5 degrees Celsius cooler than normal in the east-central tropical Pacific. Markedly strengthened trade winds and much reduced cloudiness indicate a strong coupling between the ocean and overlying atmosphere. As typically observed with the advent of the mature stage of La Niña, sea surface temperatures in the western tropical Pacific and eastern Indian Ocean have risen to well above their averages, while those in the western Indian Ocean have become below average.

The subsurface waters of the central and eastern equatorial Pacific also continue to reflect moderate to strong La Niña conditions, with temperatures of 1 to 5 degrees Celsius below average down to a depth of 150 meters. This large volume of anomalously cold water is likely to maintain the existing cooler than average ocean surface temperatures. Almost all forecast models predict a continuation of the current La Niña for at least the next 2-4 months, taking the event through first quarter of 2011 and possibly into the second quarter (April or early May). The strength of the event is likely to decrease during the course of the coming 4 months. This outlook is based on outputs from numerical prediction models, the typical seasonal cycle of ENSO, and on the presence of above-normal subsurface sea temperatures in the western equatorial Pacific that are slowly moving eastward.

This La Niña developed quickly in June and July 2010, closely following the dissipation of the 2009/10 El Niño. Since its initial development, this event has featured a very strong atmospheric component with the associated indicators showing it to be one of the strongest of the last century, and robust ocean-atmosphere coupling. In particular, the enhanced trade winds in the western and central portions of the equatorial Pacific,

and especially the Southern Oscillation Index, have approached record levels during some months in the second half of 2010. The below average sea level pressure and above average sea surface temperatures in the western tropical Pacific and eastern Indian Ocean have led to much above average rainfall in parts of Australia, Indonesia and southeast Asia. Other major precipitation patterns believed to be linked to the ongoing La Niña situation include above average rainfall in southern Africa, below average rainfall in eastern equatorial Africa, and below average rainfall in central-southwest Asia and southeastern South America.

It is important to recognize that while the state of El Niño or La Niña may be the most important factor leading to climate risk assessments in many regions, climate extremes may also develop as a consequence of ocean/atmosphere interactions outside of the tropical Pacific. For climate outlooks that incorporate the effects of both the current La Niña and other climate factors, users should consult their respective National Meteorological and Hydrological Services (NMHSs) and regional climate institutions, as well as the Regional Climate Outlook Forums (RCOFs). More detailed and regionally tailored climate outlooks, with possibly more frequent updates, will likely be issued by the regional services.

In summary:

- A significant La Niña episode continues in tropical Pacific Ocean, with a very strong atmospheric component, moderate to strong oceanic component and a robust ocean-atmosphere coupling.
- The ongoing La Niña is associated with typical sea surface temperature anomaly signatures in the western Pacific (warmer) and the Indian Ocean (warmer in the east and colder in the west).
- Model predictions indicate a continuation of this La Niña at least through the first quarter of 2011, and possibly into April or even May. Beyond that time, the evolution of El Niño/La Niña cycle is uncertain.
- In light of the above assessment, regions typically impacted by La Niña events are advised to take note of the expected continuation of moderate to strong La Niña conditions over the coming 1-2 months, and weaker La Niña conditions during March and April. Consultation of local climate outlooks provided by the respective regional and national agencies is recommended for the best information on management of climate-related risks.

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.

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