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World Meteorological Organization

EL NIÑO/LA NIÑA UPDATE

Current Situation and Outlook

Following the rapid dissipation of the 2009/10 El Niño in early May 2010, a brief period of neutral conditions prevailed, leading to the current state of borderline La Niña conditions. These borderline conditions are more likely than not to strengthen to become a basin-wide La Niña episode during the second half of 2010. It is also possible, but less likely, for neutral conditions to prevail during the remainder of 2010. Re-development of El Niño during the period is considered very unlikely.

Sea-surface temperatures are currently near the borderline between cool-neutral and weak *La Niña* conditions across the tropical Pacific basin as a whole. After the recent *El Niño* of moderate intensity which ended in early May, the sea-surface temperature anomalies in the central and eastern tropical Pacific decreased through the neutral range during the remainder of May and the first half of June, but by mid-June had decreased to approximately -0.5 degrees Celsius, near the borderline of *La Niña* conditions. Accompanying the cooling of the SST has been a tendency toward stronger-than-average low-level trade winds, and weaker than average equatorial convection from the dateline to the South American coast. These atmospheric conditions are suggestive of cool-neutral or weak *La Niña* conditions. However, as can still happen during this time of the year, a fluctuation toward anomalous westerly near-surface winds over the coming month to six weeks could arrest the movement toward a *La Niña* event, resulting in a return to cool-neutral conditions. This possibility introduces some uncertainty regarding the most likely development during the remainder of 2010.

At present there are no indications of such a wind event, and a progression toward *La Niña* conditions continues. Supporting the likelihood of further movement toward *La Niña* is the fact that almost all dynamical forecast models indicate a strong likelihood for *La Niña* development, suggesting that the large-scale tropical Pacific ocean-atmosphere system is conducive to such an outcome. The main factor leading to these *La Niña* forecasts is the presence of cooler than normal conditions beneath the surface of the central and eastern Equatorial Pacific. The net indication, then, leads to a slightly higher likelihood for *La Niña* development than for lingering at the borderline or assuming cool-neutral conditions. However, there are no clear indications at this time regarding the strength of the possible *La Niña* event in terms of sea-surface temperatures.

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 domain. For climate outlooks that incorporate the effects of both the possibly forthcoming *La Niña* and climate factors independent of the *El Niño/La Niña* state, users should consult their respective National Meteorological and Hydrological Services and regional climate institutions. More detailed, regionally tailored climate outlooks will likely be issued by the regional services. These outlooks may be consulted for updates that will likely be issued more frequently than this quarterly WMO *El Niño/La Niña* Update.

In summary:

- The *El Niño* of moderate intensity prevailing in 2009/10 dissipated quickly in early May, was followed by a neutral condition from mid-May to mid-June, and has currently reached the borderline of a weak *La Niña* condition. The outlook for the rest of 2010 is for a possibility of continued borderline *La Niña* conditions or just cool-neutral conditions, but more likely for further movement toward *La Niña* conditions and a basin-wide *La Niña* episode of currently unknown strength. A return to *El Niño* conditions is considered very unlikely.

- Below average sea temperatures exist beneath the surface of the central and eastern equatorial Pacific, and forecast models continue to predict further decreases in the central and eastern Equatorial Pacific sea-surface temperature. In particular, most dynamical models strongly favor further *La Niña* development.

- While it is likely that *La Niña* conditions will further develop in the next several months, the timing and magnitude of such an event in 2010 are uncertain, with no indications at this time of a particularly strong event in terms of sea-surface temperatures.

- In light of the above assessment, regions typically impacted by *La Niña* events are advised to take note of the enhanced risk of such an event this year.

The situation in the tropical Pacific will therefore 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 respective 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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