

World Meteorological Organization



# EL NIÑO UPDATE

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## El Niño Update

### Current Situation and Outlook

At present, warmer than normal sea-surface temperatures are observed in the central equatorial Pacific, and most computer models are currently forecasting some warming to prevail in the central and eastern equatorial Pacific for the remainder of the year. Development of an El Niño event in the second half of the year would not be unprecedented, but would be unusual. While the chances of an El Niño have increased, expert opinion currently favours a range of possible outcomes for the basin-wide state of the tropical Pacific from near-neutral to El Niño for the remainder of the year, giving El Niño about as much chance as not of developing. La Niña is not considered likely.

The previous statement (March 2004) indicated that slightly warmer than normal conditions prevailed in the central/western equatorial Pacific. Since then, the area of anomalous warmth has migrated and expanded slowly toward the east, with equatorial sea-surface temperatures being over 1°C warmer than normal from around the dateline to about 140°W over the last month. If this were to persist, it would satisfy one condition for an El Niño. However, other conditions are not yet indicative of a basin-wide El Niño, particularly the presence of below normal sea-surface temperatures in the far eastern equatorial Pacific, from about 120°W to the South American coast.

The increase in the likelihood of an El Niño developing during the remainder of the year also increases the likelihood of development of the characteristic climate patterns that accompany such events. Indeed, sea-surface temperature conditions in the central and western equatorial Pacific are already of a structure similar to that of an El Niño. Sea-surface temperatures in the western equatorial Pacific are near to or slightly below normal. If this condition were to continue in combination with the above normal conditions in the central equatorial Pacific, climate patterns symptomatic of El Niño conditions could arise in the central and western tropical Pacific region and surrounding continents.

The atypical circumstances at this time make it important to consider carefully the conditions prevailing in other tropical ocean basins, as well. Regional climate fluctuations can also be driven by sea-surface temperature patterns in the tropical Atlantic and tropical Indian Oceans. Monitoring of conditions at and beneath the ocean surface in these regions is in early development, and as yet there is incomplete understanding of the mechanisms of systematic sea-surface temperature changes in these ocean basins. Nonetheless, correlations between observed anomalies in the Atlantic or Indian Oceans and local and regional seasonal climate fluctuations are important factors in making detailed interpretations of possible regional consequences of the current state of the climate system. When considering response strategies, it is important to consult National Meteorological and Hydrological Services for local and regional information.

In summary:

- An unusual situation currently prevails: sea-surface temperatures in the central equatorial Pacific are warmer than normal and at levels typically associated with El Niño, but a basin-wide pattern is not yet established. Eastern equatorial Pacific temperatures are actually below normal, while basin-wide atmospheric patterns are not characteristic of El Niño.
- Forecast models and expert interpretation indicate that surface temperatures in the eastern equatorial Pacific are expected to rise over the next few months, but uncertainty in the magnitude of the rise is such that outcomes for the basin-wide state of the tropical Pacific range from near-neutral to El Niño for the remainder of the year.
- Whether or not a basin-wide El Niño develops, the unusual conditions developing in the tropical Pacific do provide important information on the range of possible climate patterns to expect for surrounding regions during the coming months.

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.

### **Climate Patterns in the Pacific**

Research conducted over the past few 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 temperature at the surface in the central and eastern tropical Pacific Ocean becomes substantially higher than normal. 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. The El Niño phase of 2002-2003 was not as strong as that in 1997-1998. El Niño events change the likelihood of particular climate patterns around the globe, but the outcomes of each such event are never exactly the same. Furthermore, while there is generally a relationship between the

global impacts of an El Niño 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 computer 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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