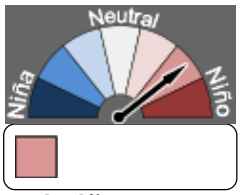
Australian Government
Bureau of Meteorology

ENSO Wrap-Up

Current state of the Pacific and Indian Ocean

Tropical Pacific Ocean remains on track for El Niño in 2014



El Niño ALERT

ENSO Tracker

(or click graphic)

Issued on Tuesday 3 June 2014 | Product Code IDCKGEWWOO

The tropical Pacific Ocean remains on track for El Niño in 2014, with just over half of the climate models surveyed by the Bureau suggesting El Niño will become established by August. An El Niño ALERT remains in place, indicating at least a 70% chance of an El Niño developing in 2014.

Sea surface temperature (SST) anomalies in the tropical Pacific Ocean have increased steadily since February, and are now greater than +0.5 °C in the key NINO regions. However, above-average SSTs also extend into the western tropical Pacific, meaning strong west to east gradients in tropical Pacific SST anomalies are yet to become established. As a result, atmospheric indicators—such as the Southern Oscillation Index and trade winds—have only shown a weak response.

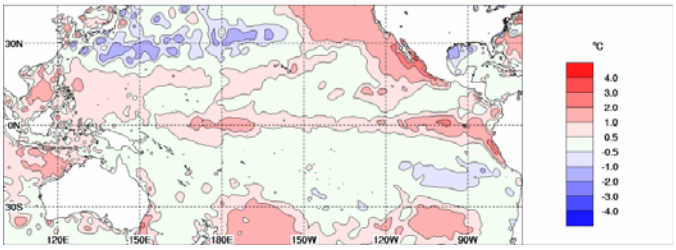
For Australia, El Niño is often associated with below-average rainfall over southern and eastern inland areas and above-normal daytime temperatures over southern parts of the continent. It is not uncommon to see some impacts prior to an event becoming fully established. May rainfall was below normal across parts of eastern Australia and maximum temperatures were above normal across much of the south and east.

The Indian Ocean Dipole (IOD) is currently neutral. Model outlooks suggest the IOD is most likely to remain neutral through winter, with two of the five models surveyed suggesting a positive IOD may develop during spring. Positive IOD events often coincide with El Niño and are typically associated with large parts of southern and central Australia experiencing lower rainfall than usual.

Next update expected on 17 June 2014 | print version

Monthly sea surface temperatures

The equatorial Pacific continued to warm during May. The sea surface temperature (SST) anomaly map for May shows warm anomalies are present in the Pacific along nearly the entire equator as well as to Australia's northwest and around much of the Maritime Continent to Australia's north. Compared to last month, anomalies in the eastern tropical Pacific and around the Date line have shown the most warming.



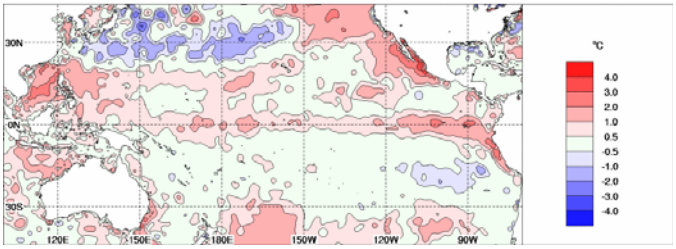
Index	April	May	Temperature change
NINO3	+0.4	+0.7	0.3 °C warmer
NINO3.4	+0.3	+0.5	0.2 °C warmer
NINO4	+0.5	+0.7	0.2 °C warmer

Baseline period 1961–1990.

Weekly sea surface temperatures

The SST anomaly map for the week ending 1 June is similar to that of two weeks ago, although warm SST anomalies are now seen across the entire tropical Pacific. Warm SST anomalies are also seen across large areas of western Pacific from the East China Sea to the waters surrounding Australia. These warm anomalies extend into the Indian Ocean.

While the warm tongue of water extending along the equator in the eastern and central Pacific is typical of an emerging El Niño, the warm anomalies in the western Pacific mean the west to east gradient of temperatures is not yet large enough to generate and sustain a typical El Niño response in the tropical atmosphere.



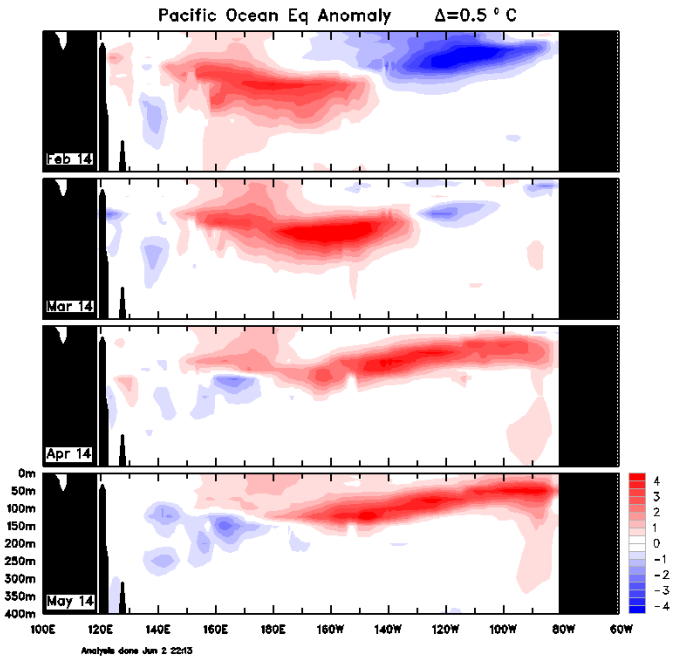
Index	Previous	Current	Temperature change (2 weeks)
NINO3	+0.7	+0.8	0.1 °C warmer
NINO3.4	+0.5	+0.6	0.1 °C warmer
NINO4	+0.7	+0.7	no change

Baseline period 1961–1990.

See also: Animation of recent SST changes Weekly index values Map of NINO regions

Monthly sub-surface temperatures

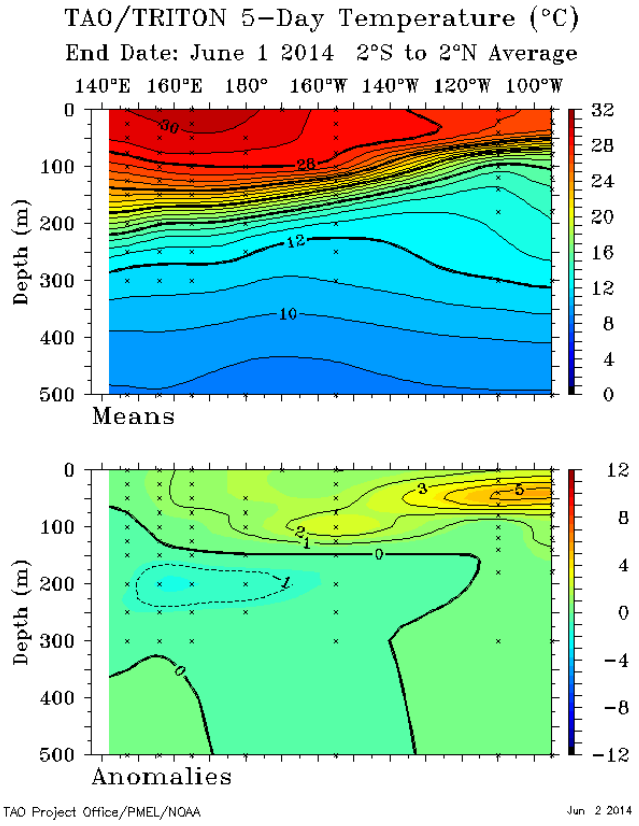
The four-month sequence of sub-surface temperature anomalies (to May) shows warm temperature anomalies across the top 150 m of the equatorial Pacific between the Date Line and the South American coast. Sub-surface waters are more than 4 °C warmer than average in several parts of the central and eastern equatorial Pacific.



5-day sub-surface temperatures

The sub-surface temperature map for the 5 days ending 1 June shows water in the sub-surface of the eastern half of the equatorial Pacific is warmer than average in the top 100 m. Water in an area of the sub-surface in the far eastern equatorial Pacific is currently more than 5 °C above average around 50 m depth.

As shown in the animation of sub-surface temperature changes, this pool of warmer-than-average sub-surface water has been present in the eastern tropical Pacific for a number of weeks and is likely to sustain the surface warming in the region during winter.

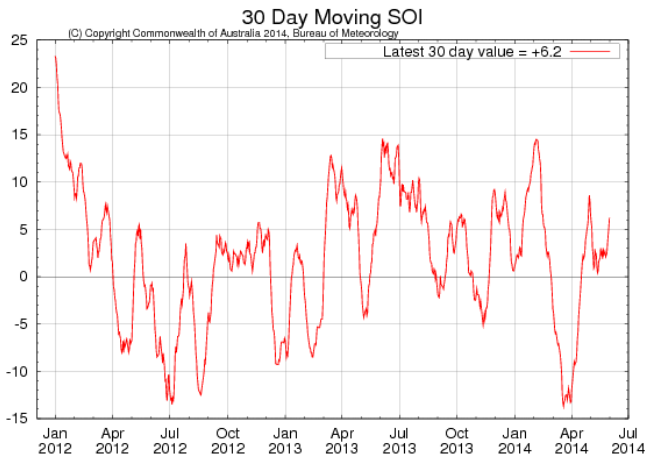


See also: Animation of recent sub-surface temperature changes Archive of sub-surface temperature charts

Southern Oscillation Index

The Southern Oscillation Index (SOI) has risen over the past two weeks but remains within neutral values. The latest approximate 30-day SOI value to 1 June is +6.2.

Sustained positive values of the SOI above +8 may indicate a La Niña event, while sustained negative values below −8 may indicate an El Niño event. Values of between about +8 and −8 generally indicate neutral conditions.

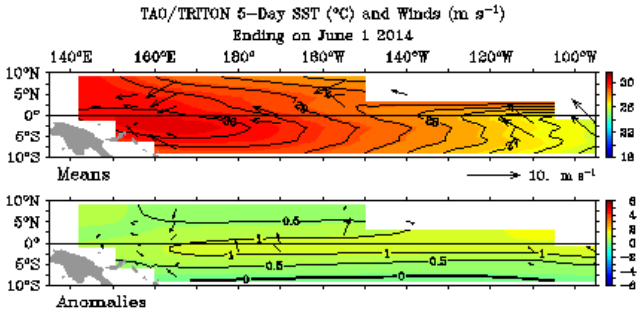


See also: Monthly SOI graph Table of monthly SOI values 30-day SOI values

Trade winds

Trade winds are near-average across the tropical Pacific (see anomaly map for the 5 days ending 1 June).

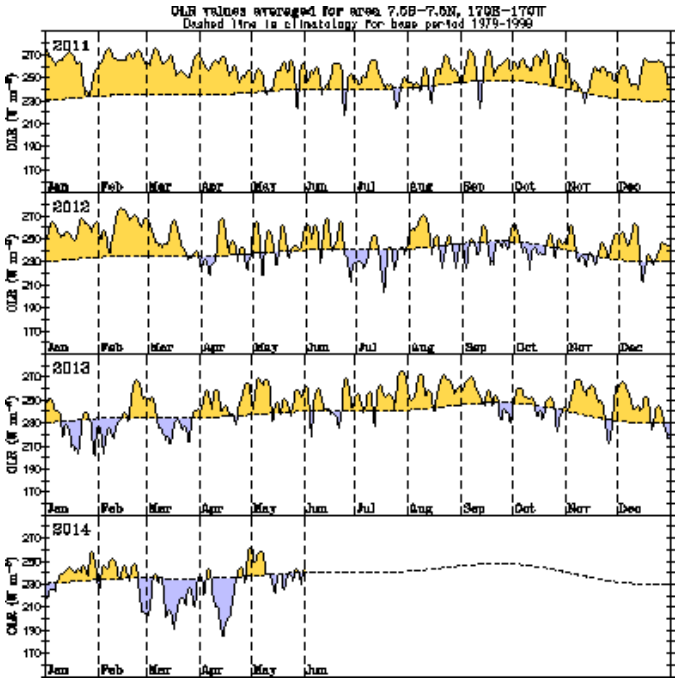
During La Niña events, there is a sustained strengthening of the trade winds across much of the tropical Pacific, while during El Niño events there is a sustained weakening of the trade winds.



Cloudiness near the Date Line

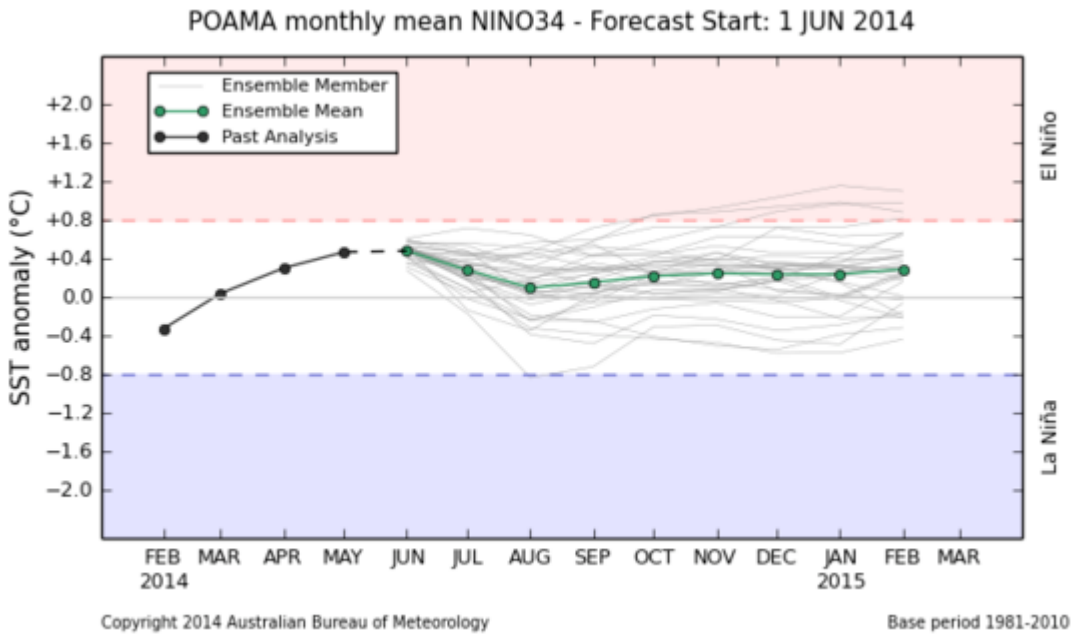
Cloudiness near the Date Line has continued to fluctuate around values close to the long-term average during the past two weeks.

Cloudiness along the equator, near the Date Line, is an important indicator of ENSO conditions, as it typically increases (negative OLR anomalies) near and to the east of the Date Line during an El Niño event and decreases (positive OLR anomalies) during a La Niña event.



Model outlooks

Most international climate models surveyed by the Bureau indicate that SSTs in the equatorial Pacific Ocean are likely to continue to warm during winter. Several of the surveyed climate models have eased their predictions slightly since the last update but around half continue to indicate that the equatorial Pacific is likely to exceed El Niño thresholds before or during the southern hemisphere spring.

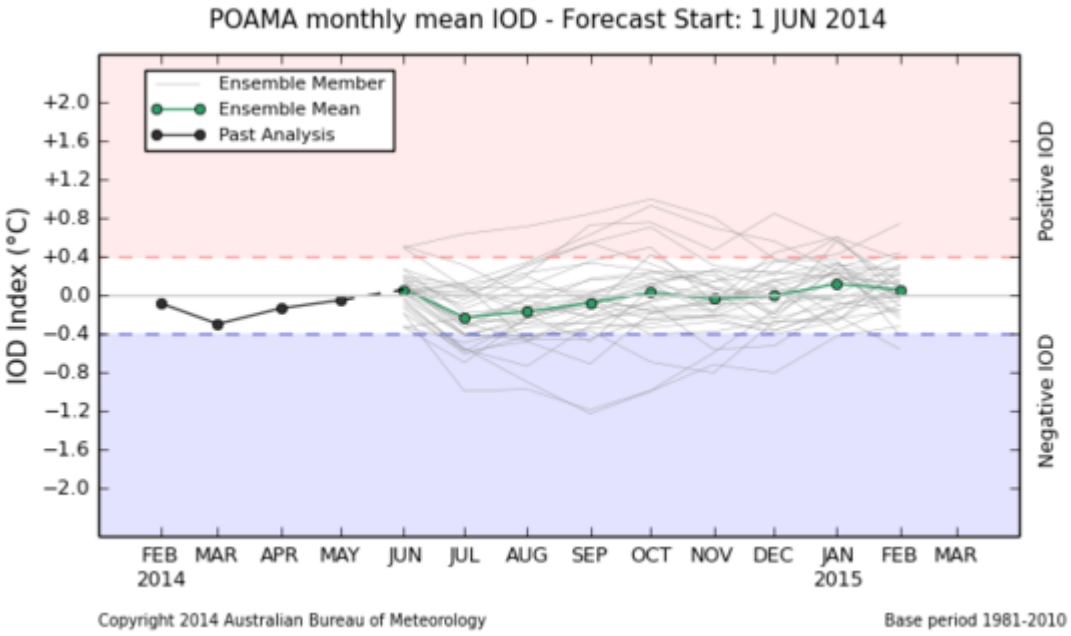


See also: Climate model summary

Indian Ocean Dipole

The Indian Ocean Dipole (IOD) remains neutral, with the latest weekly index value (1 June) +0.1 °C.

Climate models surveyed in the model outlooks favour neutral IOD values over the coming months, with a slight trend towards a positive IOD developing in spring. The chance of a positive IOD event is elevated during an El Niño. Positive IOD events often coincide with El Niño and are typically associated with lower than average winter and spring rainfall over parts of southern and central Australia.



See also: POAMA model IOD time series Map of IOD regions IOD forecasts Weekly IOD values

Effects on rainfall

- Pacific Ocean: El Niño and la Niña (ENSO)
  - Average rainfall patterns during El Niño
  - Average rainfall patterns during La Niña
  - Past El Niño events
  - Past La Niña events
  - About the 2010–11 and 2011–12 La Niña events
- Indian Ocean: Indian Ocean Dipole (IOD)
  - Average rainfall patterns during negative IOD years
  - Average rainfall patterns during positive IOD years

About climate influences

- Australian climate Influences

Related information

- Tropical (MJO) monitoring
- Sea temperature analysis
- Out-going longwave radiation maps

International sites

- TAO/TRITON data
- World Meteorological Organization El Niño/La Niña Update

Archive

- Previous ENSO Wrap-Ups

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