



ENSO Wrap-Up

Current state of the Pacific and Indian Ocean

El Niño-like impacts emerge in a number of areas

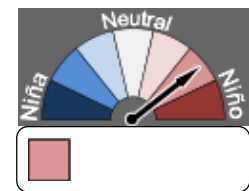
Issued on 2 December 2014 | Product Code IDCKGEWW00

Many climate indicators remain close to El Niño thresholds, with climate model outlooks suggesting further intensification of conditions remains likely. The Bureau's ENSO Tracker status is currently at ALERT, indicating at least a 70% chance that El Niño will be declared in the coming months. Whether or not an El Niño fully develops, a number of El Niño-like impacts have already emerged.

Several ENSO indicators are currently close to, or exceed, El Niño thresholds. These include tropical Pacific Ocean temperatures, which have now exceeded El Niño levels for a month, and the Southern Oscillation Index, which has remained at or near El Niño levels for three months. Other indicators, such as tropical cloud, trade winds and rainfall patterns, have either remained near average or only temporarily approached thresholds. This indicates a typical El Niño ocean–atmosphere interaction may not be fully locked in.

The majority of international climate models surveyed by the Bureau suggest further warming of the tropical Pacific Ocean is likely, so it also remains possible that the ocean and atmosphere will fully couple in the coming weeks to months. If an El Niño is established, models suggest it will be weak, or moderate at most. Regardless of whether an El Niño is declared, El Niño-like effects are likely, as shown by the Bureau's December–February Climate Outlook, which shows a drier and warmer summer is likely for many parts of Australia. Some El Niño-like impacts have already been seen this spring in Australia and several regions around the globe, including Asia, South America and southern Africa.

Next update expected on 16 December 2014 | [print version](#)



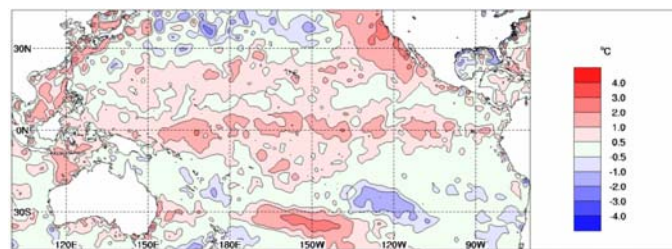
El Niño ALERT

ENSO Tracker

(or *click graphic*)

Weekly sea surface temperatures

The pattern of sea surface temperature (SST) anomalies in the equatorial Pacific remains generally similar to two weeks ago, with warm anomalies along the entire equator. Warm anomalies have decreased slightly in the east while warm anomalies have extended further west and now cover much of the area between the north of Papua New Guinea and the northwest of Australia (see SST anomaly map for the week ending 30 November). Warm anomalies are also present across most of the Indian Ocean, large parts of both the northern and southern Pacific Basin and the waters around the coastline of southern Australia.

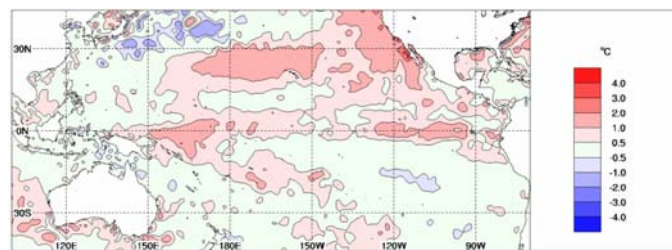


Index	Previous	Current	Temperature change (2 weeks)
NINO3	+1.0	+0.8	0.2 °C cooler
NINO3.4	+0.9	+0.9	no change
NINO4	+1.1	+1.0	0.1 °C cooler

Baseline period 1961–1990.

Monthly sea surface temperatures

The SST anomaly map for October shows waters were warmer than average across nearly the entire equatorial Pacific as well as across much of the northern Pacific, around southern Australia and across much of the Indian Ocean. This pattern was generally similar to the previous month, although SSTs along the equator have warmed since September.



Index	September	October	Temperature change
NINO3	+0.5	+0.7	0.2 °C warmer
NINO3.4	+0.4	+0.6	0.2 °C warmer
NINO4	+0.7	+0.8	0.1 °C warmer

Baseline period 1961–1990.

See also:

[Animation of recent SST changes](#)

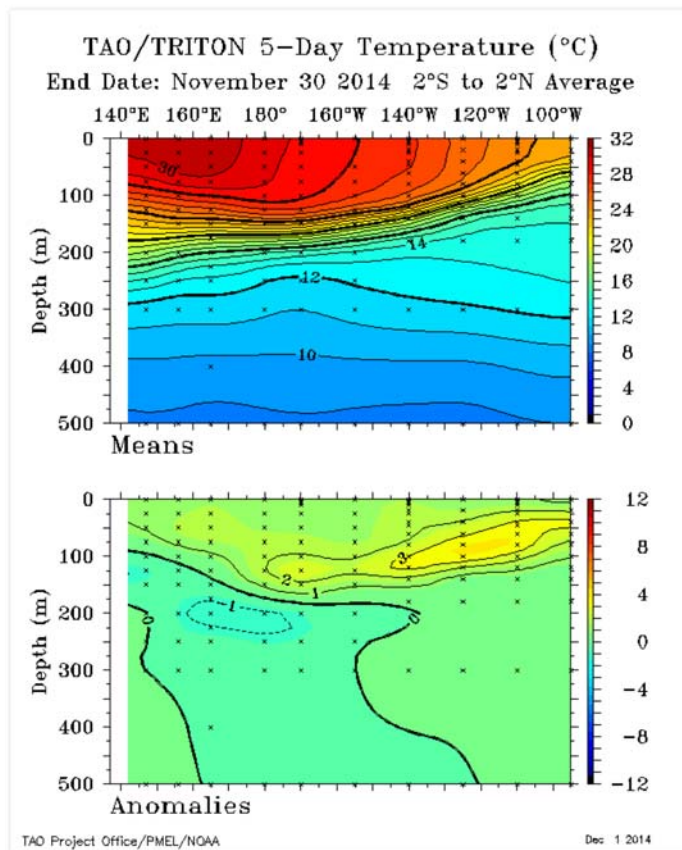
[Weekly index values](#)

[Sea temperature analyses](#)

[Map of NINO regions](#)

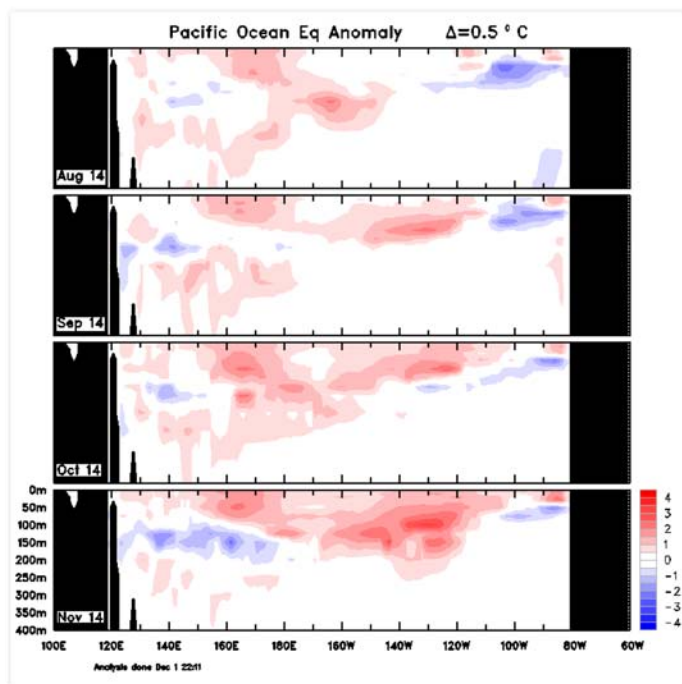
5-day sub-surface temperatures

The sub-surface temperature map for the 5 days ending 30 November shows temperatures are warmer than average in the sub-surface of the eastern equatorial Pacific. Sub-surface waters are more than 3 °C warmer than average in an area east of between 140°W at around 100 m to 50 m depth. This pool of warmer-than-average water has moved eastward and risen closer to the surface over the past two weeks.



Monthly sub-surface temperatures

The four-month sequence of sub-surface temperature anomalies (to November) shows warm anomalies were present across most of top 200 m of the equatorial sub-surface profile, although there were areas of weak cool anomalies in both the far east and western equatorial Pacific. The area of cool anomalies in the western equatorial Pacific, at around 150 m depth, has expanded compared to October and now extends from 120°E to the Date Line.



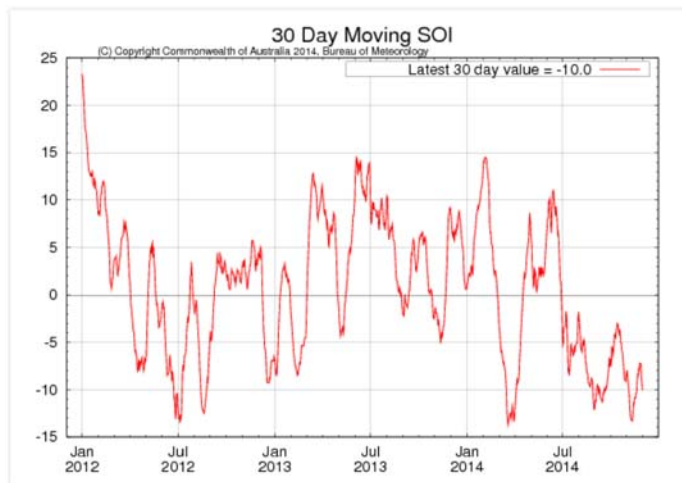
See also: [Animation of recent sub-surface temperature changes](#)

[Archive of sub-surface temperature charts](#)

Southern Oscillation Index

The Southern Oscillation Index (SOI) has remained between around -11 and -7 over the past fortnight. The latest 30-day SOI value to 30 November is -10.0 .

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](#)

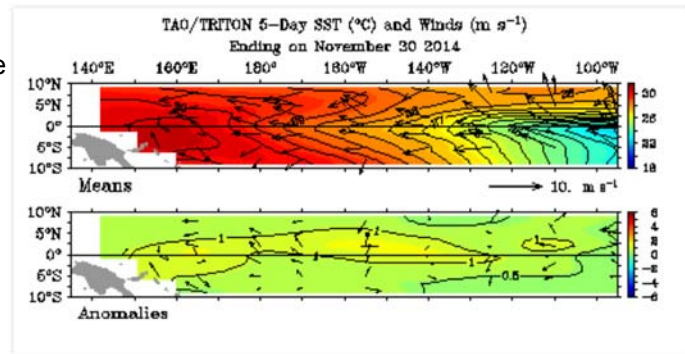
[Table of monthly SOI values](#)

[30-day SOI values](#)

Trade winds

Trade winds are currently near-average over the tropical Pacific for the 5 days ending 30 November (see map).

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.



Data Source:

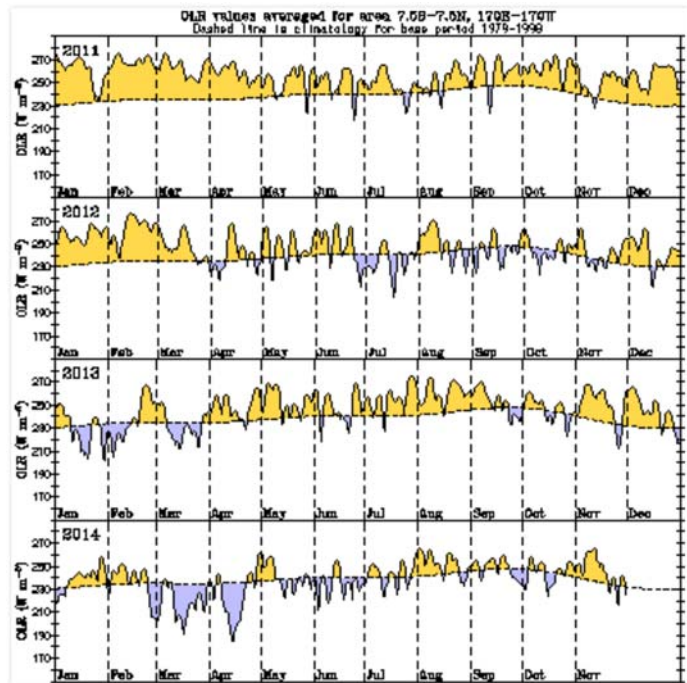
[TAO/TRITON data](#)

[Time-longitude wind anomalies](#)

Cloudiness near the Date Line

Cloudiness near the Date Line has fluctuated around average over the past two weeks.

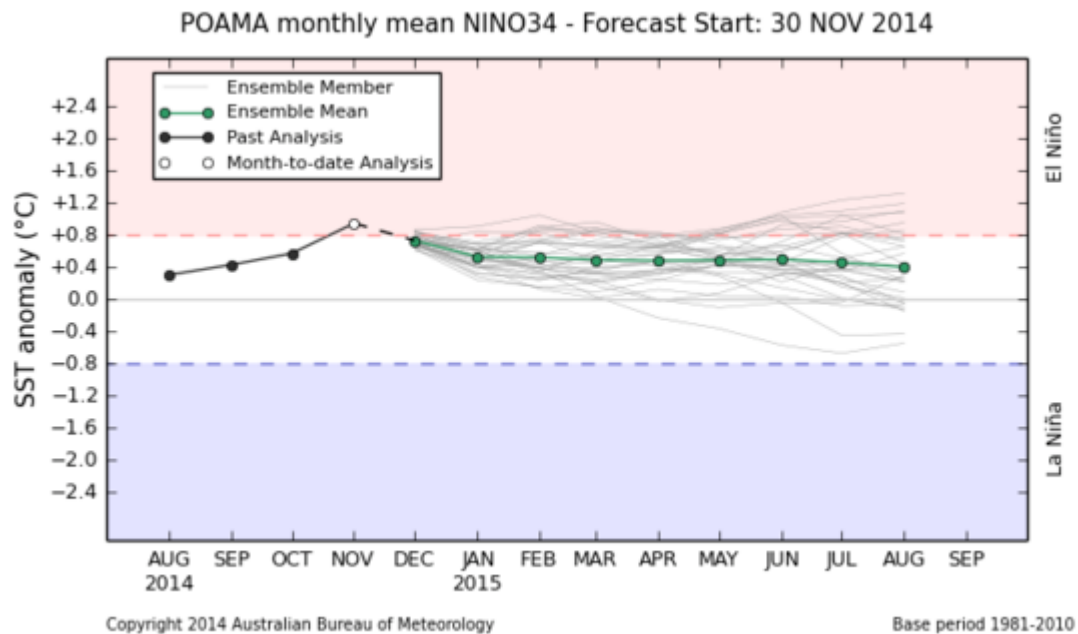
Cloudiness along the equator, near the Date Line, is an important indicator of ENSO conditions, as it typically increases (negative OLR anomalies) near and to the east of the Date Line during El Niño and decreases (positive OLR anomalies) during La Niña.



- Spatial cloudiness
- Regional cloudiness
- Out-going longwave radiation maps

Model outlooks

Five of the eight surveyed international [climate models](#) predict that central Pacific Ocean SSTs will reach El Niño thresholds during December. Two of the models predict SSTs will remain above the threshold value into the austral autumn, while the others indicate continued warm conditions, but most fall away from the threshold value. On the whole, these outlooks continue to indicate that peak central equatorial Pacific SSTs are unlikely to rise far beyond the threshold value.



See also:

[Climate model summary](#)

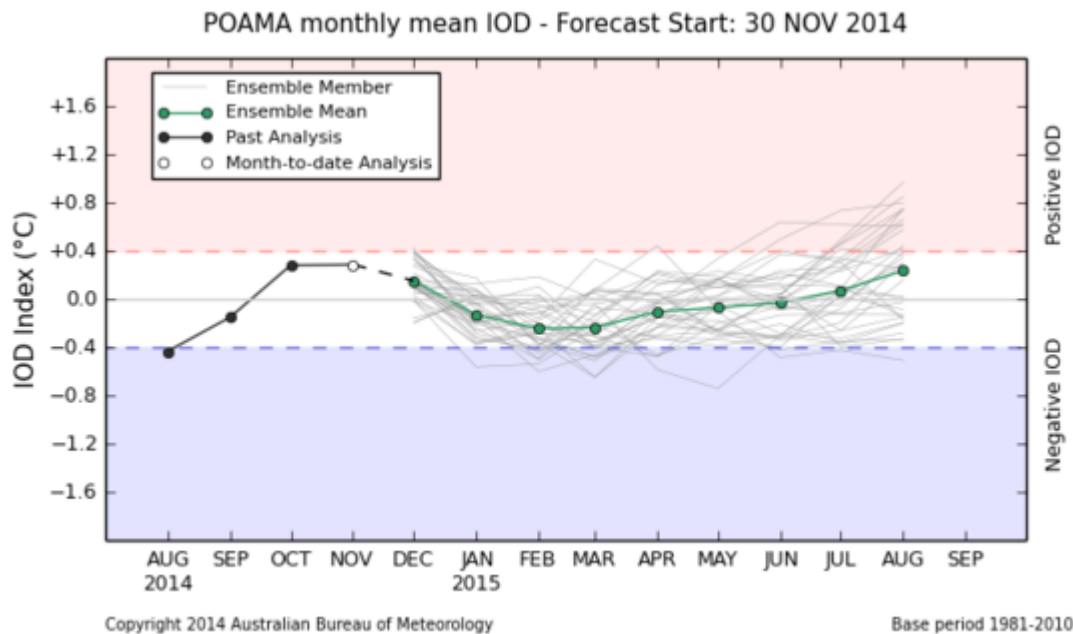
[POAMA model](#)

[Map of NINO regions](#)

Indian Ocean Dipole

The Indian Ocean Dipole (IOD) index remains neutral. The latest weekly index value to 30 November is +0.2 °C. Climate models surveyed in the [model outlooks](#) favour a continuation of neutral IOD values for the remainder of the year.

The IOD typically has little influence on the Australian climate from December to April.



See also:

[POAMA model](#)

[IOD time series](#)

[Map of IOD regions](#)

[IOD forecasts](#)

[Weekly IOD values](#)

Archive

- [Previous ENSO Wrap-Ups](#)

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