

18-11-2014

# ENSO Wrap-Up

Current state of the Pacific and Indian Ocean

## Tropical Pacific Ocean moves closer to El Niño

The Pacific Ocean has shown some renewed signs of El Niño development in recent weeks. Above-average temperatures in the tropical Pacific Ocean have warmed further in the past fortnight, while the Southern Oscillation Index (SOI) has generally been in excess of El Niño thresholds for the past three months. Climate models suggest current conditions will either persist or strengthen. These factors mean the Bureau's ENSO Tracker Status has been upgraded from WATCH to ALERT level, indicating at least a 70% chance of El Niño occurring.

Not all indicators have shifted towards El Niño. Tropical cloudiness near the Date Line and trade wind strength are close to average, suggesting the atmosphere is still not firmly linked with the warmer ocean below. However, trade winds have weakened several times over the past few months and SOI values have remained generally negative, suggesting at least some atmospheric response to the underlying ocean conditions.

International climate models expect the warm tropical Pacific Ocean temperatures to persist, with most models predicting values will remain near or beyond El Niño thresholds for the

next two to three months. Regardless of whether or not El Niño fully develops, warmer-

than-average tropical Pacific Ocean temperatures, combined with cooler waters currently to the north of Australia increase the chance of some El Niño-like impacts. For many parts of Australia, this suggests below average rainfall and above average temperatures in the months ahead (as shown by the November–January Climate Outlook).



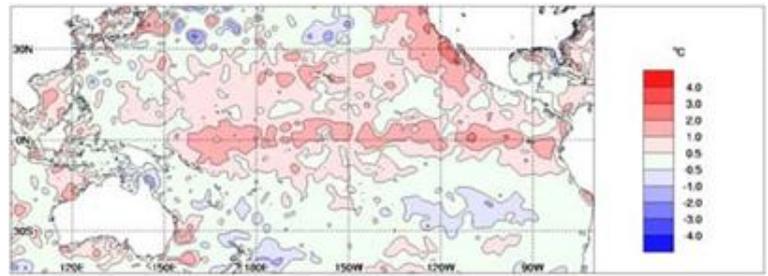
### ENSO Tracker

*(or click graphic)*

## Weekly sea surface temperatures

Sea surface temperature (SST) anomalies have again increased in the central the tropical Pacific. Positive anomalies are present along the equator east of 150°E (see SST anomaly map for the week ending

16 November) and also across most of the Indian Ocean and most of the northern Pacific Basin. Weak cool anomalies are present between northern Australia and Papua New Guinea.

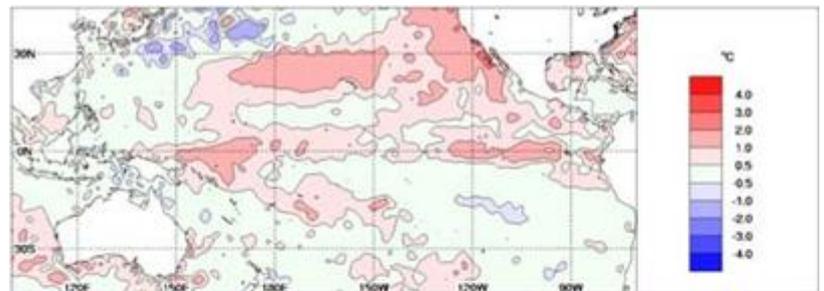


Index	Previous	Current	Temperature change (2 weeks)
NINO3	+0.9	+1.0	0.1 °C warmer
NINO3.4	+0.7	+0.9	0.2 °C warmer
NINO4	+0.9	+1.1	0.2 °C warmer

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.

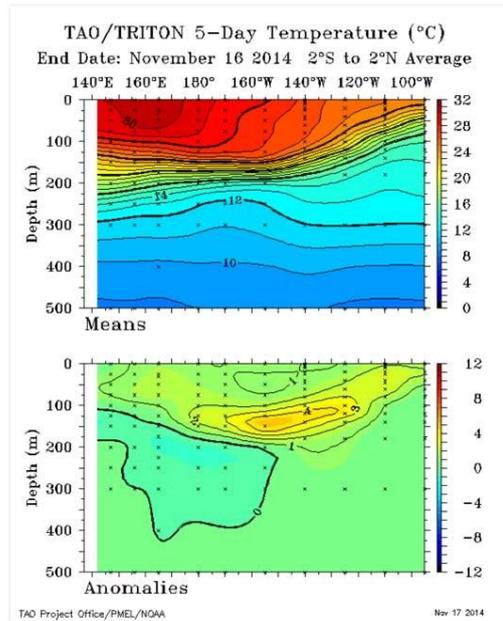


Index	September	October	Temperature change
NINO3	+0.5	+0.7	0.2 °C warmer
NINO3.4	+0.4	+0.6	0.2 °C warmer
NINO4	+0.7	+0.8	0.1 °C warmer

Baseline period 1961–1990.

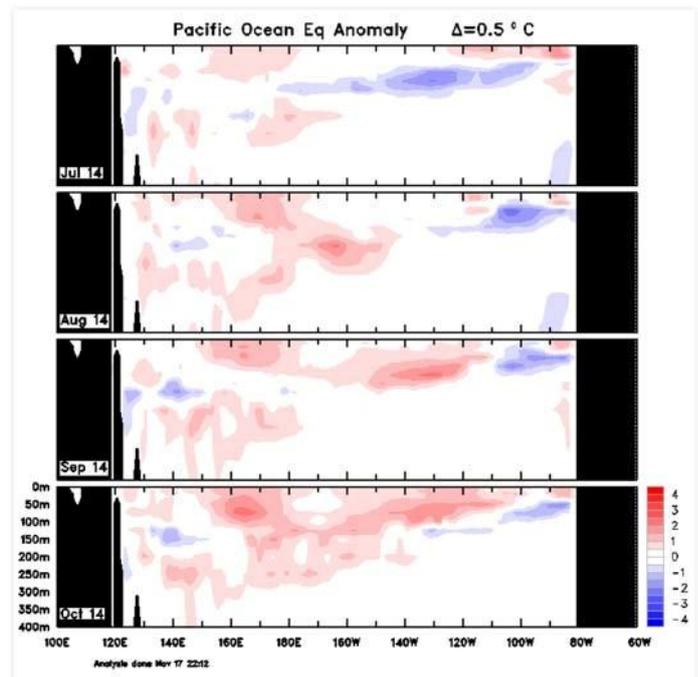
## 5-day sub-surface temperatures

The sub-surface temperature map for the 5 days ending 16 November shows temperatures are warmer than average in the sub-surface of the central to eastern equatorial Pacific. Sub-surface waters are more than 4 °C warmer than average in an area between 160°W and 140°W at 150 m depth.



## Monthly sub-surface temperatures

The four-month sequence of sub-surface temperature anomalies (to October) shows warm anomalies were present across most of the equatorial sub-surface profile but most broadly between 150°E and 100°W, extending to around 200 m depth in the central region. Areas of weak cool anomalies in the sub-surface in both the far western and eastern equatorial Pacific were still present, but have decreased compared to September.

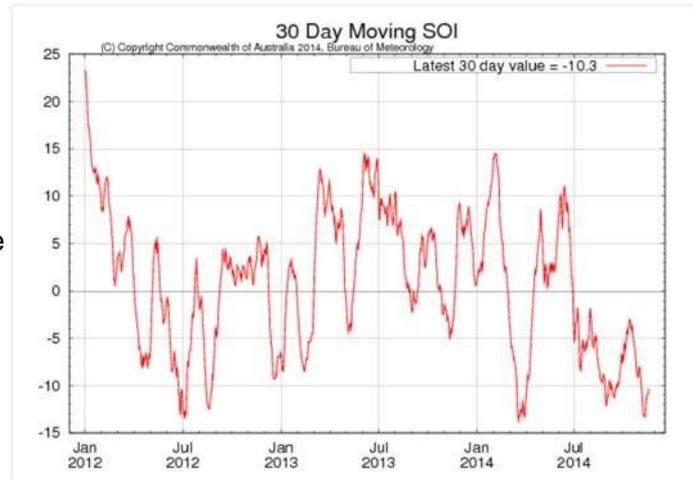


## Southern Oscillation Index

The Southern Oscillation Index (SOI) continued to drop during the past fortnight before rising slightly after reaching -13.3. The latest 30-day SOI value to

16 November is -10.9.

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.

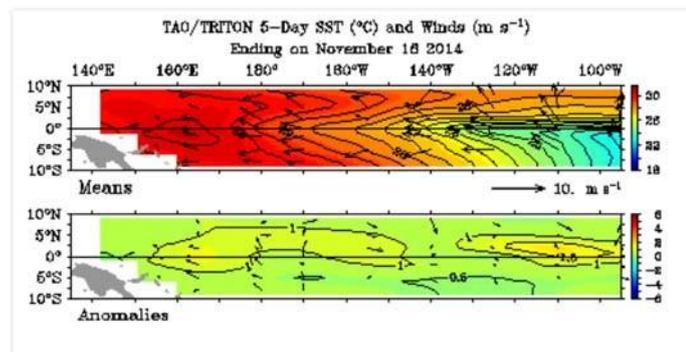


## Trade winds

Trade winds are currently slightly stronger than average over the western tropical Pacific for the 5 days ending

16 November (see map), although they returned to near-average strength during part of the past fortnight.

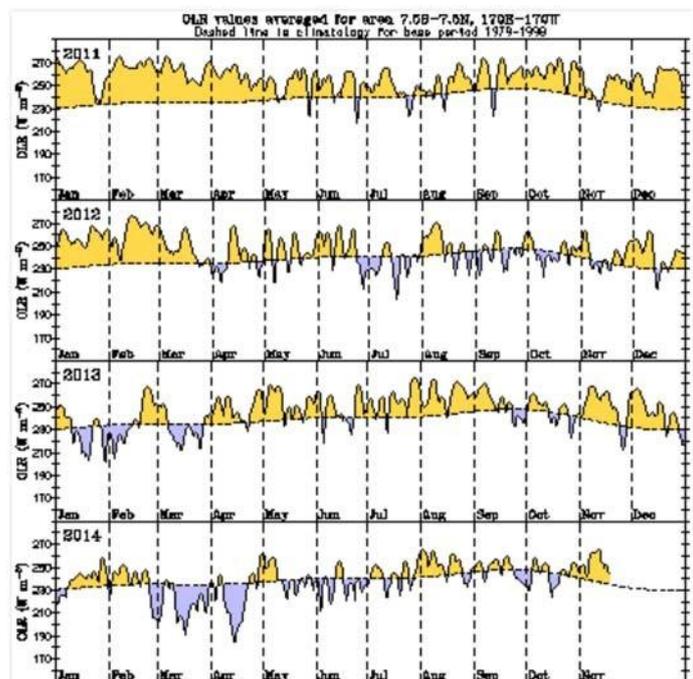
During La Niña events, there is a sustained strengthening of the trade winds across much of the tropical Pacific, while during El Niño events there is a sustained weakening of the trade winds.



## Cloudiness near the Date Line

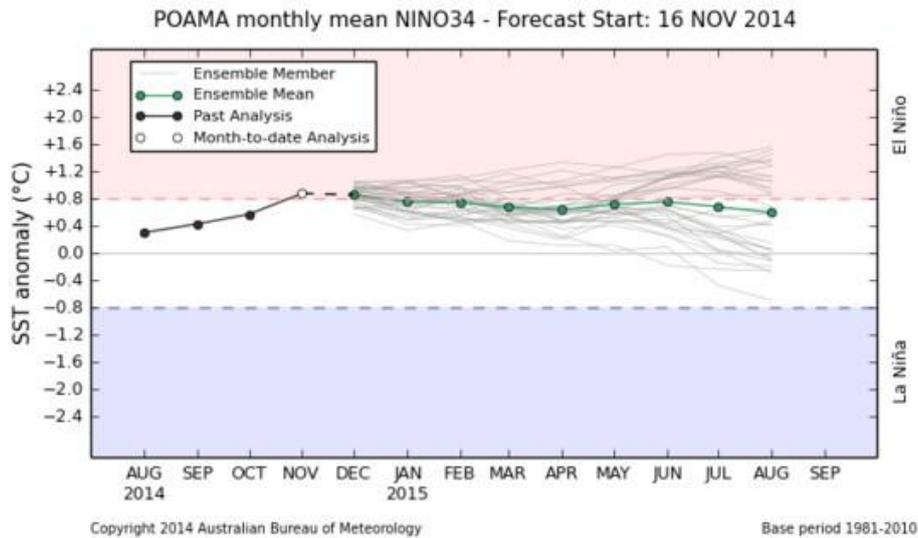
Cloudiness near the Date Line has continued to be below average over the past two weeks.

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.



## Model outlooks

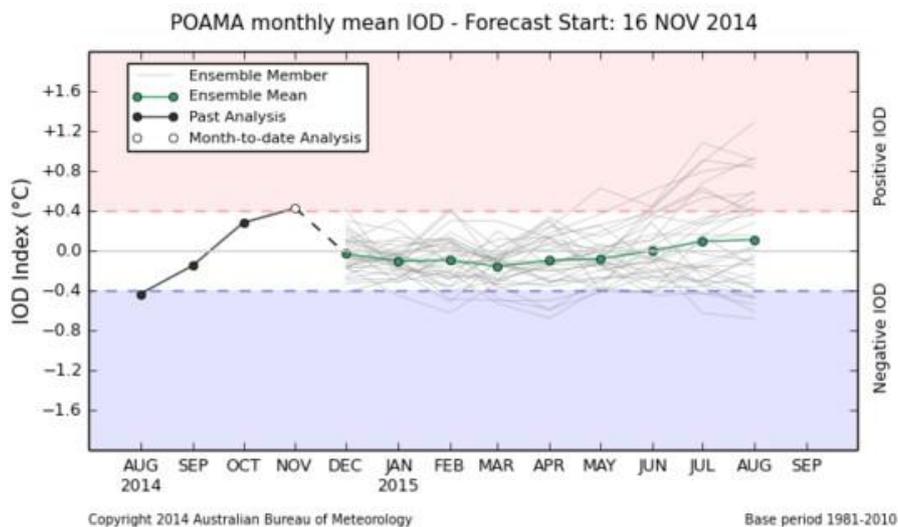
Five of the eight surveyed international [climate models](#) predict that central Pacific Ocean SSTs will reach El Niño thresholds during December. Two of the models predict SSTs will remain above the threshold value into the austral autumn, while the others indicate continued warm conditions, but most 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.



## Indian Ocean Dipole

The Indian Ocean Dipole (IOD) index remains neutral. The latest weekly index value to 16 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.



<http://www.bom.gov.au/climate/enso/>