Australian Government
Bureau of Meteorology

La Niña continues over the Pacific Basin

Issued on Wednesday 21 December | Product Code IDCKGEWWOO

La Niña remains in place across the tropical Pacific, though the majority of climate models surveyed by the Bureau suggest the La Niña may be near its peak. While the event is likely to persist through the remainder of summer, a gradual decline in the strength of the La Niña is expected over the coming months.

Climate indicators of ENSO continue to exceed La Niña thresholds, but remain weaker than at the same time in 2010. Despite some local warming over the past fortnight, tropical Pacific Ocean temperatures remain cooler than normal. Atmospheric indicators of La Niña strengthened over the last fortnight – for example, the current 30-day SOI value of +21 is the highest since the breakdown of the 2010-11 event in May 2011. Australia's climate has responded to these changes in the tropical Pacific, with above average rainfall across large parts of the country since October.

La Niña periods are usually, but not always, associated with above normal rainfall during the second half of the year and summer across large parts of Australia, particularly the eastern and northern regions. Daytime temperatures are typically cooler than average and tropical cyclone risk for northern Australia increases during the cyclone season (November to April), with February and March the peak. For detailed rainfall and temperature outlooks, please see: www.bom.gov.au/climate/ahead.

Next update expected by 4 January 2012 | print version

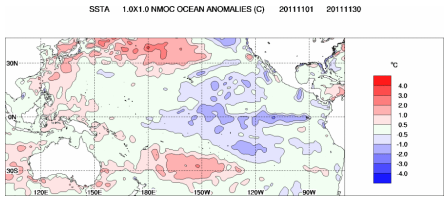
Further Details

Sea Surface Temperatures

Monthly sea surface temperatures:

Sea surface temperature (SST) anomalies continued to cool across the tropical Pacific Ocean during November. The sea surface temperature (SST) anomaly map for November shows cool anomalies have increased in the eastern Pacific when compared to October; sea surface temperatures more than 1 ℃ cooler than normal cover most of the equatorial Pacific east 160 °W.

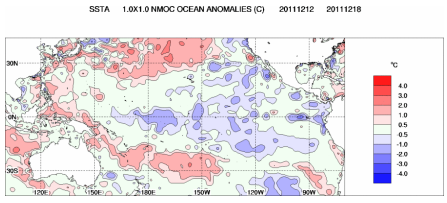
Index	October	November	Temperature change
NINO3	−0.6	−0.8	0.2 ℃ cooler
NINO3.4	−0.7	−0.9	0.2 ℃ cooler
NINO4	−0.4	−0.5	0.1 ℃ cooler



Weekly sea surface temperatures:

Weekly sea surface temperature anomalies have cooled in the central equatorial Pacific, while warming in the eastern equatorial Pacific when compared to the map from two weeks ago. The SST anomaly map for the week ending 18 December shows cool anomalies present across the majority of the equatorial Pacific east of 160° while a small area in the far east is more than 2 ℃ cooler than normal for this time of the year.

Index	Previous	Current	Temperature change (2 weeks)
NINO3	−0.9	−0.5	0.4 ℃ warmer
NINO3.4	−0.9	−0.8	0.1 ℃ warmer
NINO4	−0.6	−0.8	0.2 ℃ cooler

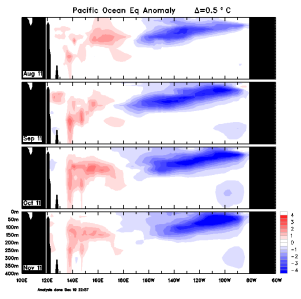


An animation of recent SST changes | Weekly data graph

Pacific ocean sub-surface temperatures

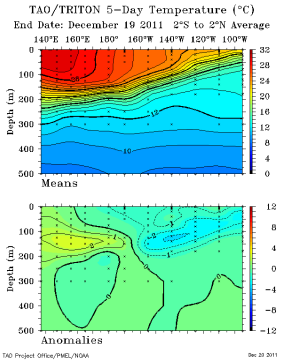
Monthly sub-surface:

The four-month sequence of sub-surface Pacific Ocean equatorial temperature anomalies shows cool anomalies in the sub-surface of the eastern Pacific have contracted slightly eastward during November although the region where water is more than 4 ℃ cooler than average has increased. Cool sub-surface anomalies extend across the entire Pacific east of the dateline.



Weekly sub-surface:

Temperatures in the sub-surface of the eastern tropical Pacific have cooled over the past two weeks. The map for the 5 days ending 20 December shows cool anomalies in the sub-surface of the eastern tropical Pacific are now more than 3 ℃ cooler than usual, for this time of the year. Anomalies in the sub-surface of the western tropical Pacific remain generally unchanged.

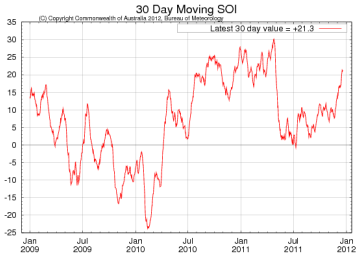


Animation of recent sub-surface changes | Archive of sub-surface temperature charts

Southern Oscillation Index:

The Southern Oscillation Index (SOI) has strengthened over the past fortnight, and is now at the highest value since the breakdown of the 2010-11 La Niña. The latest (19 December) 30-day SOI value is +21.3.

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.

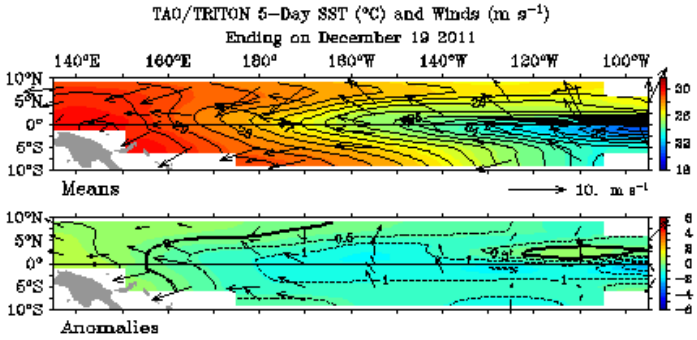


Monthly graph | SOI table | SOI text

Trade winds:

Trade winds have strengthened in the western Pacific over the past two weeks. The latest wind anomaly map, for the 5 days ending 19 December, shows trade winds are stronger than average across most of the equatorial Pacific, but near-neutral in the eastern Pacific.

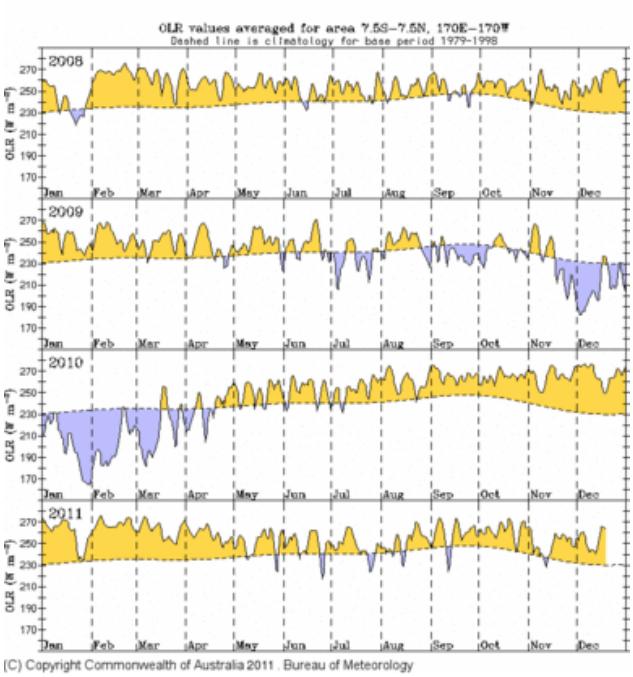
During La Niña events, there is a sustained strengthening of the trade winds across much of the tropical Pacific, while during El Niño events there is a sustained weakening of the trade winds.



Cloudiness near the dateline:

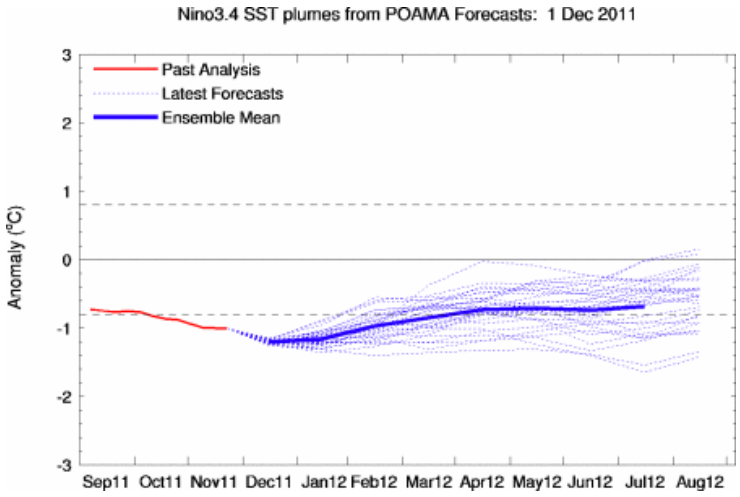
Cloudiness near the dateline has been suppressed over the past two weeks. OLR anomalies have reached the highest values seen since last autumn.

Cloudiness along the equator, near the dateline, 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.



Climate Models:

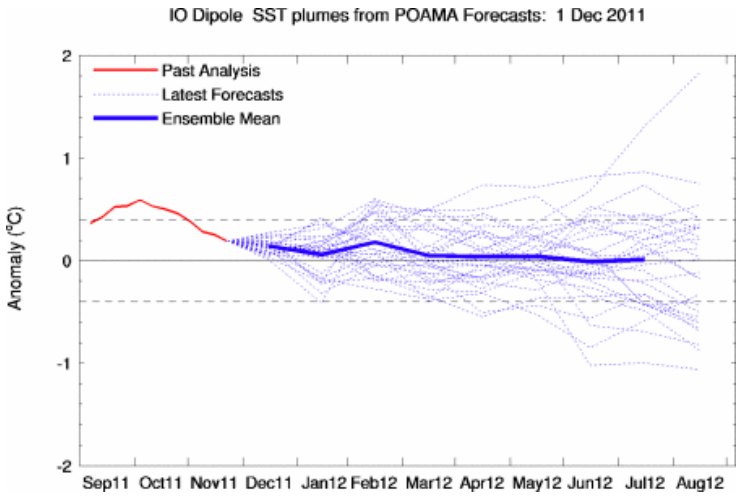
The majority of outlooks from leading international climate models surveyed by the Bureau indicate that the current La Niña may be near its peak. The current event is expected to persist throughout the summer, but a gradual weakening of La Niña conditions is forecast returning to neutral values during autumn.



Indian Ocean Dipole:

The Indian Ocean Dipole (IOD) index is currently neutral. The IOD index value for the week ending 18 December was +0.1.

Recent forecasts from the POAMA model predict neutral IOD conditions for the summer and following autumn.



IOD time series IOD map IOD forecasts DMI values