Australian Government
Bureau of Meteorology

Tropical Pacific remains ENSO neutral

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Current atmospheric and oceanic observations show a neutral El Niño-Southern Oscillation (ENSO) state. Model forecasts unanimously show a persistence of this neutral pattern for the remainder of the southern hemisphere autumn and into early winter. In other words, the development of either an El Niño or a La Niña is very unlikely in the coming three months.

Although the neutral ENSO pattern is only having a limited influence on our climate at present, Australia has experienced consistently warm land and sea surface temperatures since spring 2012, including several record breaking heat waves and the warmest summer on record. The persistently warm waters that continue to surround Australia may promote increased local rainfall in favourable weather conditions.

The Indian Ocean Dipole (IOD) has little influence upon Australia's climate from December through to April. The consensus of current model projections is for a neutral IOD for late autumn into early winter.

Next update expected on 23 April 2013 | print version

Further Details

Sea Surface Temperatures

Monthly sea surface temperatures:

The sea-surface temperature (SST) anomaly map for March shows warm anomalies have emerged along the equator in parts of the eastern Pacific, replacing cool anomalies which were present during February. Warm anomalies in the western Pacific and around Australia's north and west have weakened while warm anomalies to Australia's south have strengthened, particularly in the southeast; surface waters in these areas are generally more than 1 °C warmer than average. Broadly, the tropical Pacific Ocean remains close to the long term average.

| Index	February	March	Temperature change
NINO3	−0.3	+0.3	0.6 °C warmer
NINO3.4	−0.2	+0.1	0.3 °C warmer
NINO4	0.0	0.0	no change
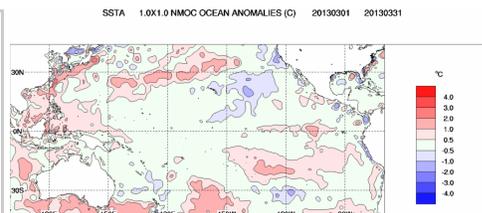
Baseline period 1961–1990.

Weekly sea surface temperatures:

SST anomalies have generally cooled in the eastern tropical Pacific when compared to two weeks ago, with cool anomalies emerging along the South American coastline (1 to 2 °C cooler than average). The SST anomaly map for the week ending 7 April shows areas of weak warm anomalies along the equator in the eastern tropical Pacific, near-average anomalies through the central Pacific, and weak warm anomalies in the far western Pacific. Warm anomalies generally remain around the Australian coastline, but have weakened during the past two weeks.

Index	Previous	Current	Temperature change (2 weeks)
NINO3	+0.6	+0.3	0.3 °C cooler
NINO3.4	+0.1	+0.2	0.1 °C warmer
NINO4	0.0	+0.1	0.1 °C warmer
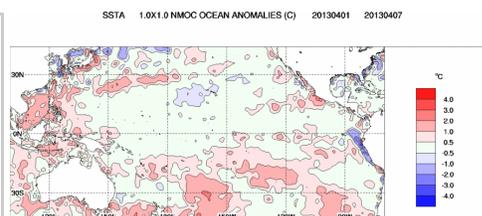
Baseline period 1961–1990.

An animation of recent SST changes | Weekly data graph | Map of NINO regions

## Pacific ocean sub-surface temperatures

Monthly sub-surface:

The four-month sequence of sub-surface temperature anomalies (to March) shows cool anomalies in the sub-surface of the eastern equatorial Pacific; this pool of cooler than normal water peaked in extent in January and has weakened during February and March. A small portion of this water was more than 4 °C cooler than average for March. Warm anomalies in the Pacific sub-surface to the west of the Date Line have contracted westward.
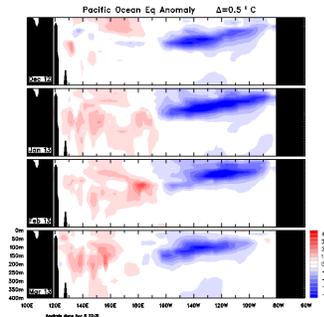
Weekly sub-surface:

The sub-surface map for the 5 days ending 7 April is generally similar to that for two weeks ago, although cool anomalies in the subsurface of the eastern Pacific have weakened slightly and warm anomalies at the surface are present in only a small part of the far east. Areas of water more than 2 °C cooler (warmer) than average are present between 100 and 200 m deep in the eastern (western) equatorial Pacific.
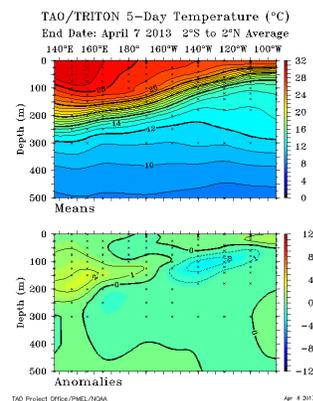
Animation of recent sub-surface changes | Archive of sub-surface temperature charts

Southern Oscillation Index:

The Southern Oscillation Index (SOI) has fluctuated over the past two weeks, with values generally near the +9 or +10 mark. The latest 30-day SOI value to 7 April is +9.0.

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.


Monthly graph | SOI table | SOI text

Trade winds:

Trade winds have strengthened across the western tropical Pacific during the past two weeks and are . The anomaly map for the 5 days ending 7 April shows trade winds are stronger than average across the western Pacific and near average across the remainder of the tropical 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.

TAO/TRITON 5-Day SST (°C) and Winds (m s⁻¹)
Ending on April 7 2013
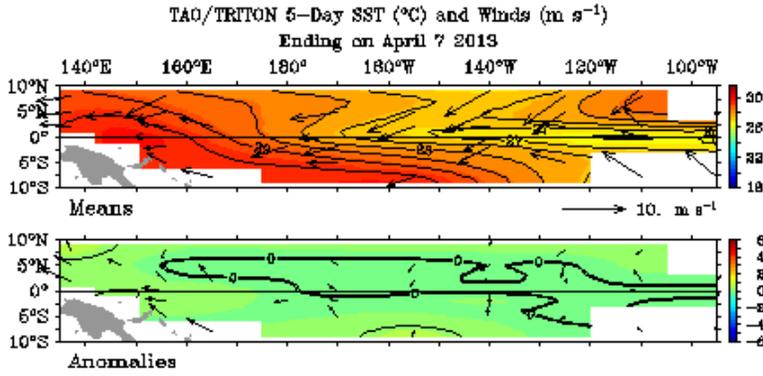
Cloudiness near the Date Line:

Cloudiness near the Date Line has been slightly below average during the past two weeks. There has not been a sustained deviation in cloudiness since March 2012, coinciding with the close of the most recent La Niña event.

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.
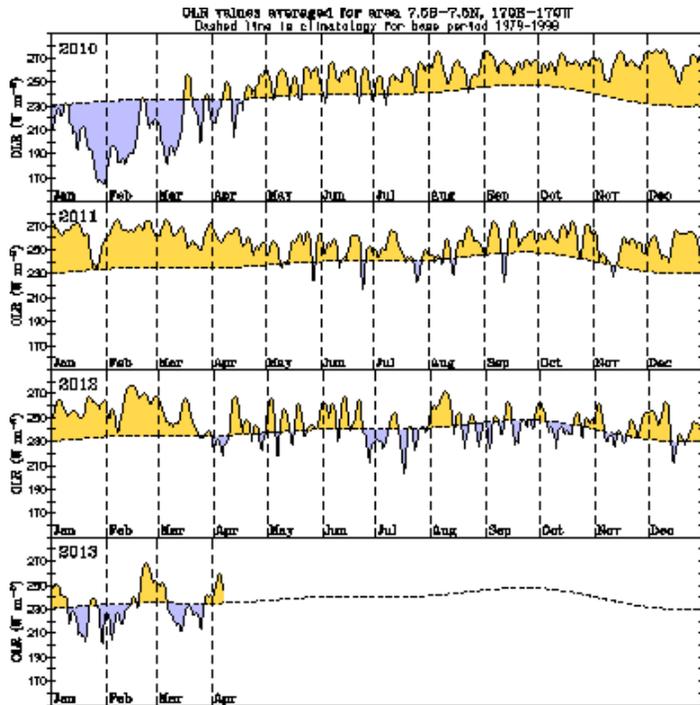
Climate Models:

International climate models surveyed by the Bureau indicate that SSTs in the equatorial Pacific Ocean are expected to remain neutral heading into the southern hemisphere winter. Predictions from dynamical models are known to have lower skill during the April to June period, however, all surveyed models are consistent in their outlooks.

POAMA monthly mean NINO34 - Forecast Start: 1 APR 2013

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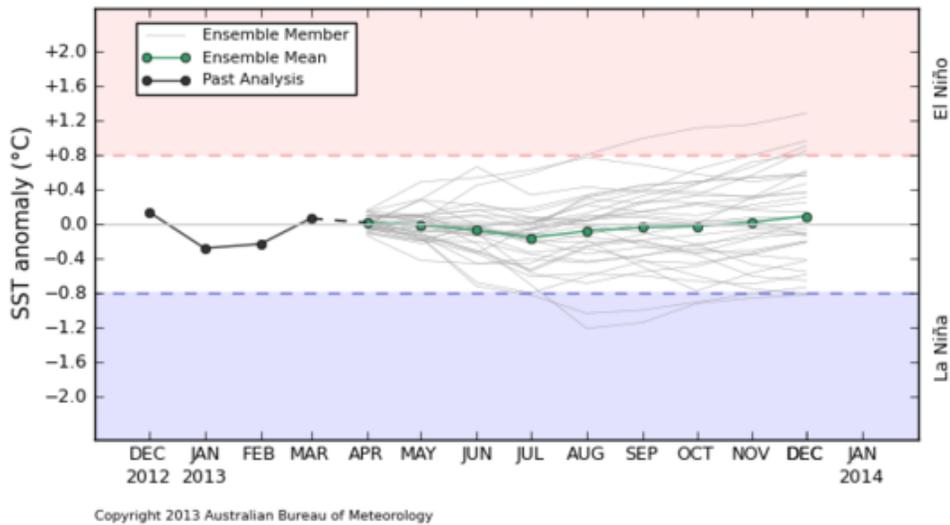
Indian Ocean Dipole:

The Indian Ocean Dipole (IOD) is currently neutral, with the latest IOD index value at +0.2 °C for the week ending 7 April. Current model outlooks indicate the IOD will remain on the cool side of neutral into the southern hemisphere winter.

POAMA monthly mean IOD - Forecast Start: 1 APR 2013

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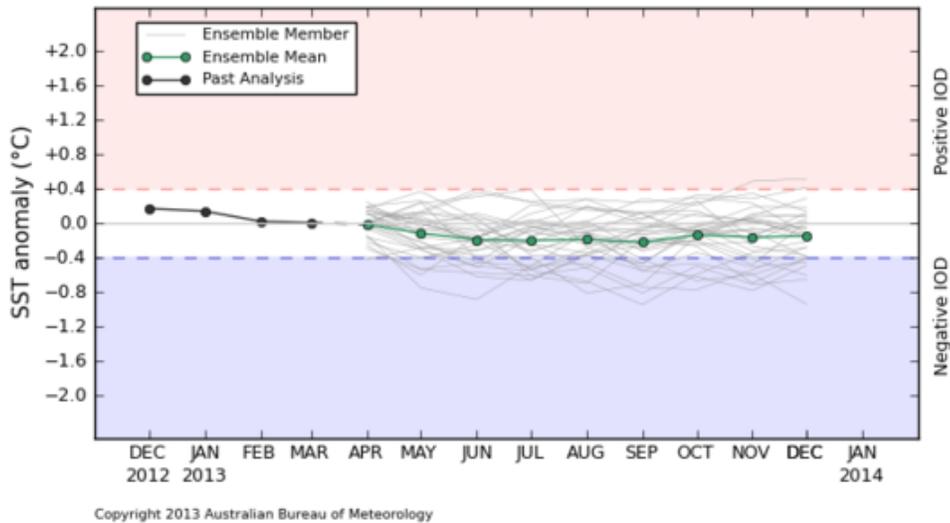
IOD time series IOD map IOD forecasts DMI values

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