



ENSO Wrap-Up

A regular commentary on the El Niño-Southern Oscillation

Product Code: IDCKGEWW00

CURRENT STATUS as at 30th September 2009

Next update expected by 14th October 2009 (two weeks after this update).

Summary: El Niño conditions remain in the Pacific

Despite a slight cooling over the past fortnight, Pacific Ocean temperatures remain at levels typical of an El Niño event. These warm conditions are forecast to persist until at least year's end by most leading climate models.

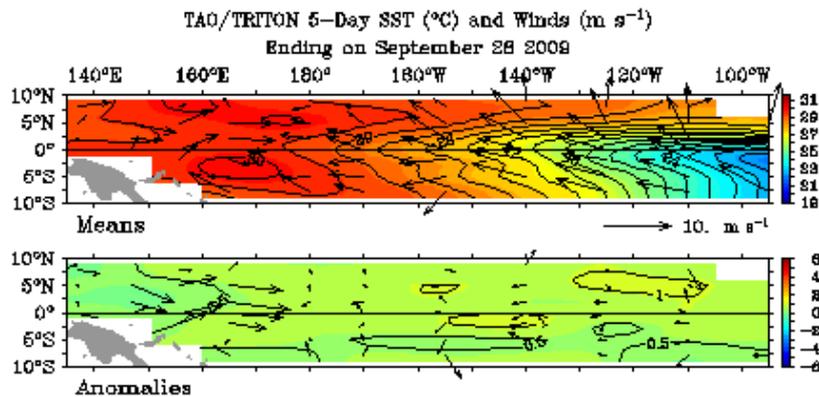
While temperatures in the central Pacific have remained at El Niño levels for the past three months, the Southern Oscillation Index has remained neutral over the same period, and has a current value of +3. Similarly, neither Pacific cloud or Trade Wind patterns have shown a consistent El Niño signature.

The apparent lack of reinforcement between the atmosphere and ocean may be related to the unusual pattern of Pacific Ocean warming, with the far western Pacific, the Coral Sea and waters off Australia's northern coasts being warmer than would be expected during an El Niño event.

While rainfall over the past three months has remained below average across large parts of eastern Australia, parts of southern Australia have fared well. Such a rainfall pattern is similar to that experienced during the El Niño event of 1991. Australian temperatures have been exceptionally warm in many areas, exceeding levels observed in past El Niño events.

The most recent values of the Indian Ocean Dipole (IOD), as measured by the Dipole Mode Index (DMI), are neutral. The Bureau's POAMA model suggests neutral IOD conditions will persist over the coming months.

See [IOD forecasts](#), [DMI values](#).



From the [NOAA/PMEL/TAO website](#).

In Brief

- The sea surface remains significantly warmer than the long-term average across most of the tropical Pacific Ocean, exceeding El Niño thresholds from west of the date-line to the South American coast.
- The sub-surface water of the tropical Pacific has been steadily cooling since June, but remains slightly warmer than the long-term mean across most of the central to eastern Pacific.
- The latest 30-day SOI value is +3, while the monthly value for August was -5.0. The SOI is neutral and does not show an El Niño trend.
- Trade winds are near normal to the east of the date-line, while westerly wind anomalies continue to dominate west of the date-line.
- Consistent with a developing El Niño, cloudiness near the date-line has been greater than normal over the past month. However, when compared with other El Niños, the current trend in cloudiness is weak.
- Most leading international climate models surveyed by the Bureau predict the tropical Pacific sea surface temperature (SST) to remain above El Niño thresholds until at least the end of 2009.

30-day moving SOI (shown against end date)



This graph is updated automatically each day. [Download data.](#)

Details

The Pacific Ocean sea surface remains significantly warmer than the long-term mean across almost all equatorial regions. The preliminary SST anomaly map for September is available [here](#); the map shows warm anomalies covering most of the tropical Pacific, with anomalies in excess of +1 °C evident across much the central to eastern equatorial Pacific. The preliminary monthly NINO indices for September are +1.0 °C, +0.9 °C and +0.8 °C for NINO3, NINO3.4 and NINO4 respectively. When compared with August values, there has been little change in the monthly NINO values. The warm SST anomalies to the west of NINO4, in the Australasian region, are unusual for an El Niño event. Typically these regions are average to cooler than average during an El Niño.

In terms of [weekly data](#), the most recent NINO indices are +0.9 °C, +0.8 °C and +0.1 °C for NINO3, NINO3.4 and NINO4 respectively. When compared with August values, NINO4 has cooled by approximately 0.2 °C, while NINO3 and NINO3.4 have remained similar in magnitude. The [7-day SST anomaly map](#) shows significantly warmer than normal SST across almost the entire tropical Pacific, with anomalies in excess of +1 °C evident along the equator east of 160 °E. An animation of [recent SST changes](#) is available.

The sub-surface of the equatorial Pacific Ocean cooled through [September](#). The sub-surface has been cooling steadily since June. Whilst in June a large volume of sub-surface water was significantly warmer than the long-term mean, there are now only weak warm anomalies. A recent map for the [5 days ending 28 September](#) shows weak warm anomalies extending across most of the equatorial Pacific. Anomalies exceeding +2 °C are evident east of 140 °W and near the date-line on a weekly scale. When compared with two weeks ago, the sub-surface has cooled slightly in the eastern Pacific and warmed slightly in the central Pacific. An animation of [recent sub-surface changes](#) is available.

An [archive of past SST and sub-surface temperature charts](#) is available.

Trade winds were generally close to normal strength across the central to eastern equatorial Pacific through September. Westerly wind anomalies persisted to the west of the date-line. The latest weekly wind anomalies are shown in the [TAO/TRITON map](#) (small image above) for the five days ending 28 September. The map shows the well established westerly wind anomalies to the west of the date-line and some very weak easterly anomalies to the east of the date-line on a weekly scale. These may have some impact upon Pacific Ocean temperatures over the coming fortnight.

The [Southern Oscillation Index \(SOI\)](#) is yet to show any clear El Niño trend. The current 30 day value of the SOI (28 September) is a neutral +3. The monthly value for August was -5. The SOI is typically below -7 during El Niño events. ([SOI graph](#), [SOI table](#)).

[Cloudiness near the date-line](#) over the equatorial Pacific is another important indicator of El Niño conditions, as it typically increases during these episodes. Consistent with a developing El Niño, cloudiness near the date-line has been greater than normal over the past month. Cloudiness over Southeast Asia and most of Australia has been below average over the last month, which is also consistent with a developing El Niño. However, there has been a consistent signal of enhanced cloudiness to the west of the date-line, a pattern which is unusual when compared with previous El Niño events and is likely to be related to the warmer than normal SSTs in the region.

International [computer model](#) predictions from seven dynamic climate models surveyed by the Bureau of Meteorology reflect the current mixed ocean and atmosphere indicators, discussed above, in their forecasts for the rest of 2009. Warming of the ocean in the coming months is now forecast by all models to be more moderate than the warming in previous forecasts. However, most models are continuing to predict SST values will remain above El Niño thresholds for the remainder of 2009. Recent forecasts from the [POAMA model](#), run daily at the Bureau of Meteorology, show a steady warming with SST remaining above El Niño thresholds into early 2010, peaking over the summer months.

THE NEXT UPDATE OF THE DETAILED SECTION ABOVE IS EXPECTED BY 14TH OCTOBER 2009

The links below can be used to keep track of important developments across the Pacific Basin.

Other Useful Links

The [Weekly Tropical Climate Note](#) issued by the Darwin office of the Bureau of Meteorology discusses the main features of the tropical atmosphere and ocean, including the **intra-seasonal oscillation or 30-60 day wave** which is thought to sometimes impact on the development of El Niño events.

The [Bureau of Meteorology Research Centre](#) (BMRC) has recently developed maps of **Out-going Longwave Radiation (OLR)**, a useful El Niño monitoring tool. Negative anomalies show areas which, in general, have been cloudier (and potentially wetter) than normal.

The [TAO / TRITON](#) data display page is excellent for creating your own plots of numerous variables that are relevant to El Niño.

Note however that information coming from other countries is likely to describe timing and impacts relevant to those countries, which will not be the same as those in Australia.



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