

# ENSO update - OCOF 145

16 October 2019

# ENSO Wrap-up

## ENSO Wrap-Up

Current state of the Pacific and Indian oceans

Issued 15 October 2019 Next issue 29 October 2019

Overview

Sea surface

Sea sub-surface

SOI

Trade winds

Cloudiness

Outlooks

Indian Ocean



### Positive Indian Ocean Dipole continues to strengthen

A strong positive Indian Ocean Dipole (IOD) continues to influence Australian and global climate. The El Niño–Southern Oscillation (ENSO) remains neutral.

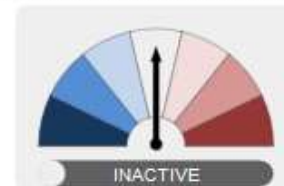
The current positive Indian Ocean Dipole event has strengthened significantly over the past month. The latest weekly value of +2.15 °C is the strongest positive weekly value since at least 2001 (when the Bureau's weekly dataset commenced), and possibly since 1997, when strong monthly values were recorded. Over the past month, strong easterly trade winds across the tropical Indian Ocean aided upwelling of cooler water in the eastern Indian Ocean. At the same time, very warm waters off the Horn of Africa have caused an even greater temperature gradient across the basin.

Given the strength of the trade winds, the IOD may strengthen further over the next fortnight. However, international climate models surveyed by the Bureau indicate the positive IOD is unlikely to persist far into summer. IOD breakdown occurs when the monsoon trough moves into the southern hemisphere in early December. However, given that the monsoon trough has had a record-late retreat from India this year, the shift into the southern hemisphere may also be later than usual.

Typically, a positive IOD brings below average winter–spring rainfall to southern and central Australia, with warmer days for the southern two-thirds of the country. Positive IOD events are often associated with a more severe fire season for southeast Australia. Learn more about the [Indian Ocean Dipole](#).

In the tropical Pacific Ocean, the El Niño–Southern Oscillation (ENSO) remains neutral. Most indicators of ENSO are near-average, although the Southern Oscillation Index (SOI) is negative (El Niño-like) due to very high atmospheric pressure at Darwin. The corresponding pressure in Tahiti is largely within normal bounds. This suggests the negative SOI is not related to a developing El Niño, but rather is likely related to the strong positive Indian Ocean Dipole and the cooler waters between Australia and Indonesia.

Climate models forecast neutral ENSO for the remainder of 2019 and into the first quarter of 2020. When ENSO is neutral, it has little effect on Australian and global climate, meaning other influences are more likely to dominate.



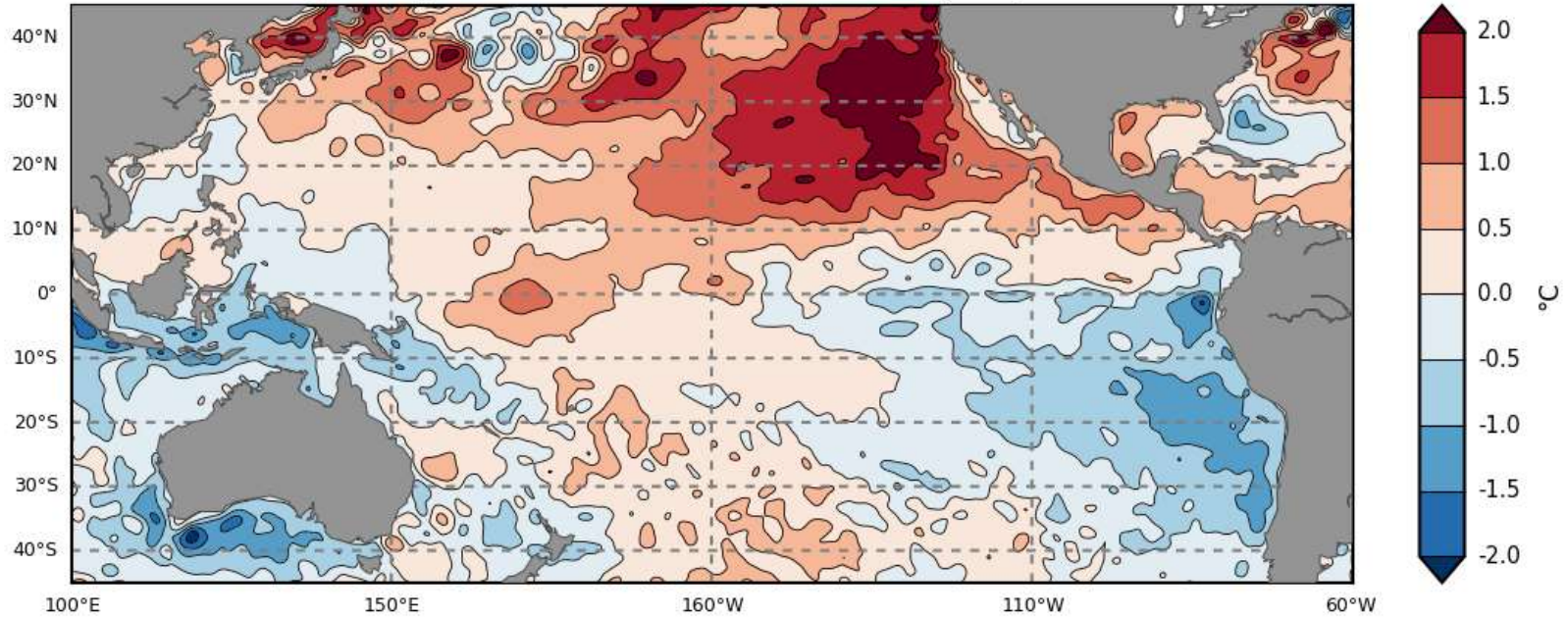
ENSO Outlook



# September 2019 SSTs

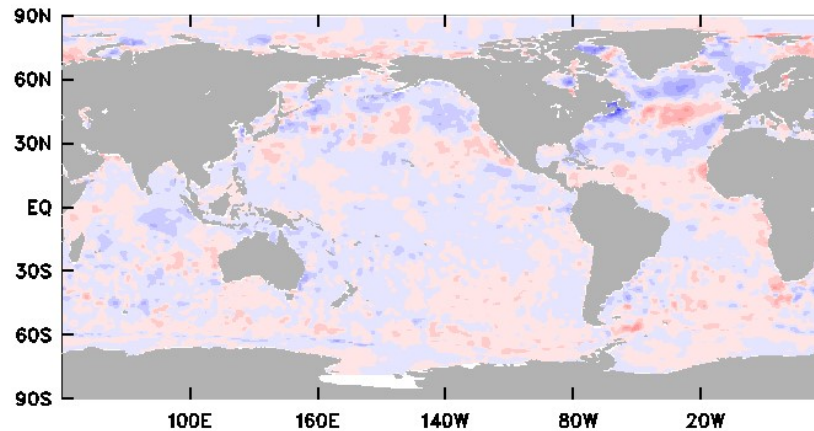
Pacific Ocean

Monthly Average Sea Surface Temperature Anomaly: September 2019

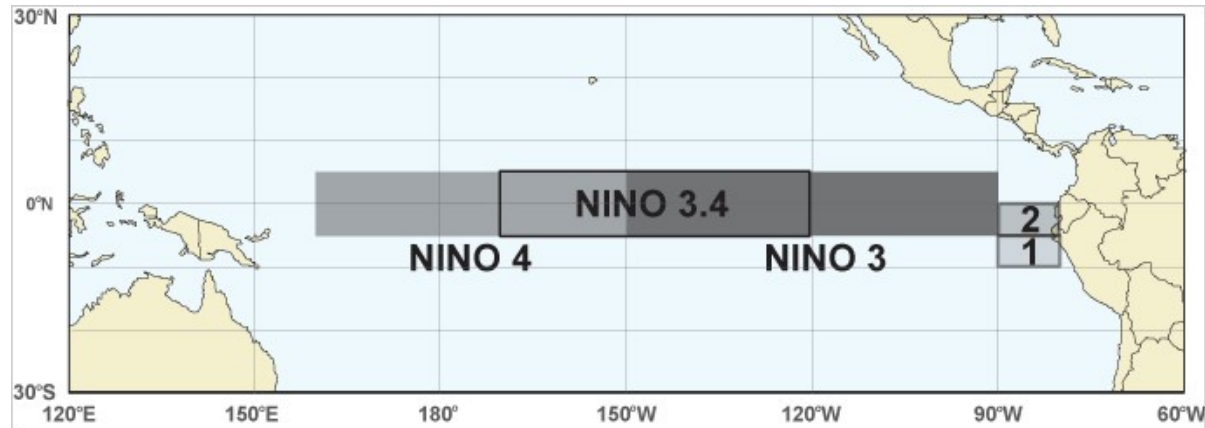


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Geoscience Energy and Maritime Division, COSPPac SPP

Difference between Sep 2019 and Aug 2019



# NINO SST anomalies (°C)



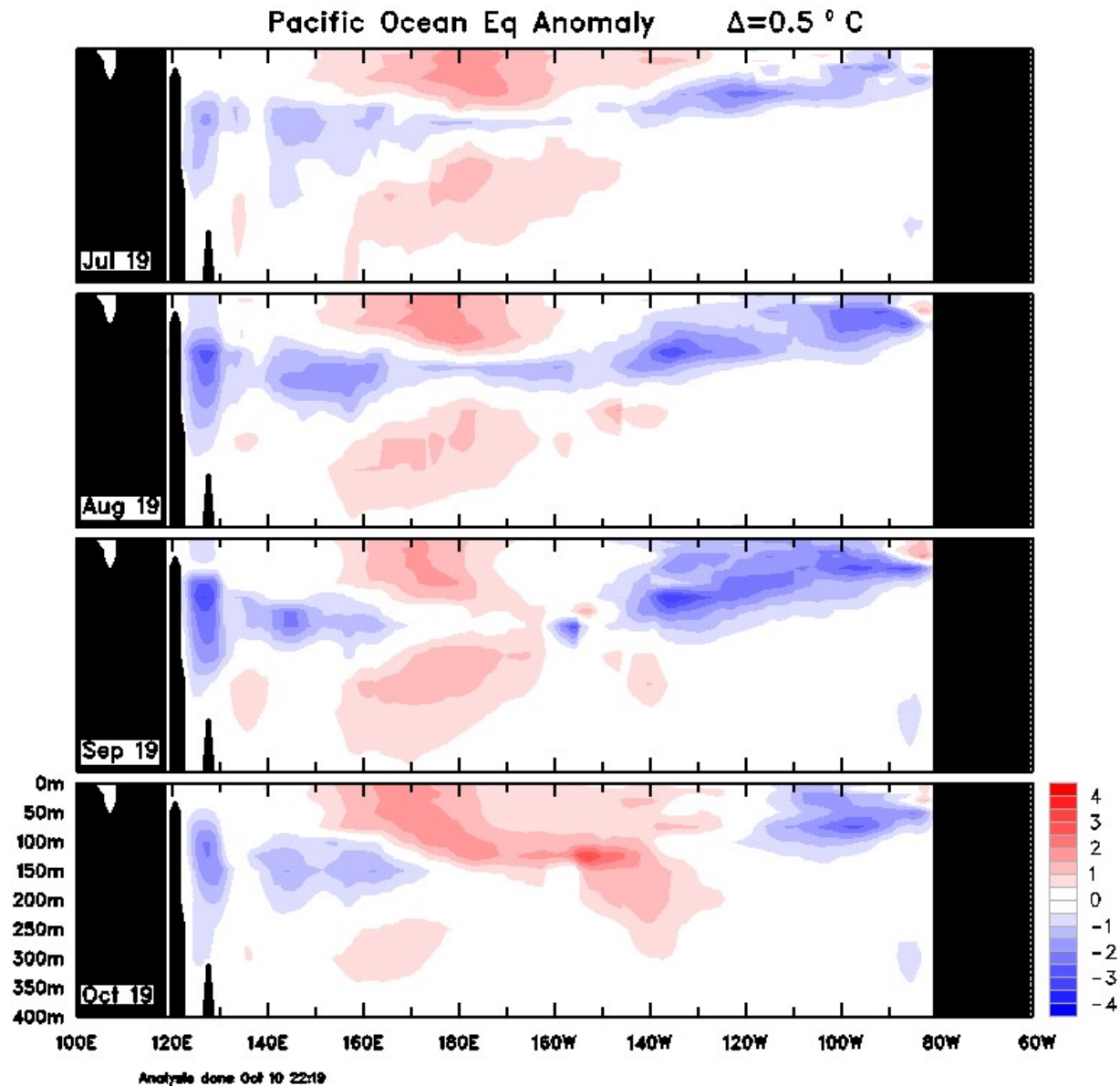
Index	Aug 2019	Sep 2019	Latest weekly
NINO3	0.0	-0.1	+0.1
NINO3.4	+0.2	0.0	+0.5
NINO4	+0.7	+0.7	+0.9

Weekly data for the week ending 13/10/2019

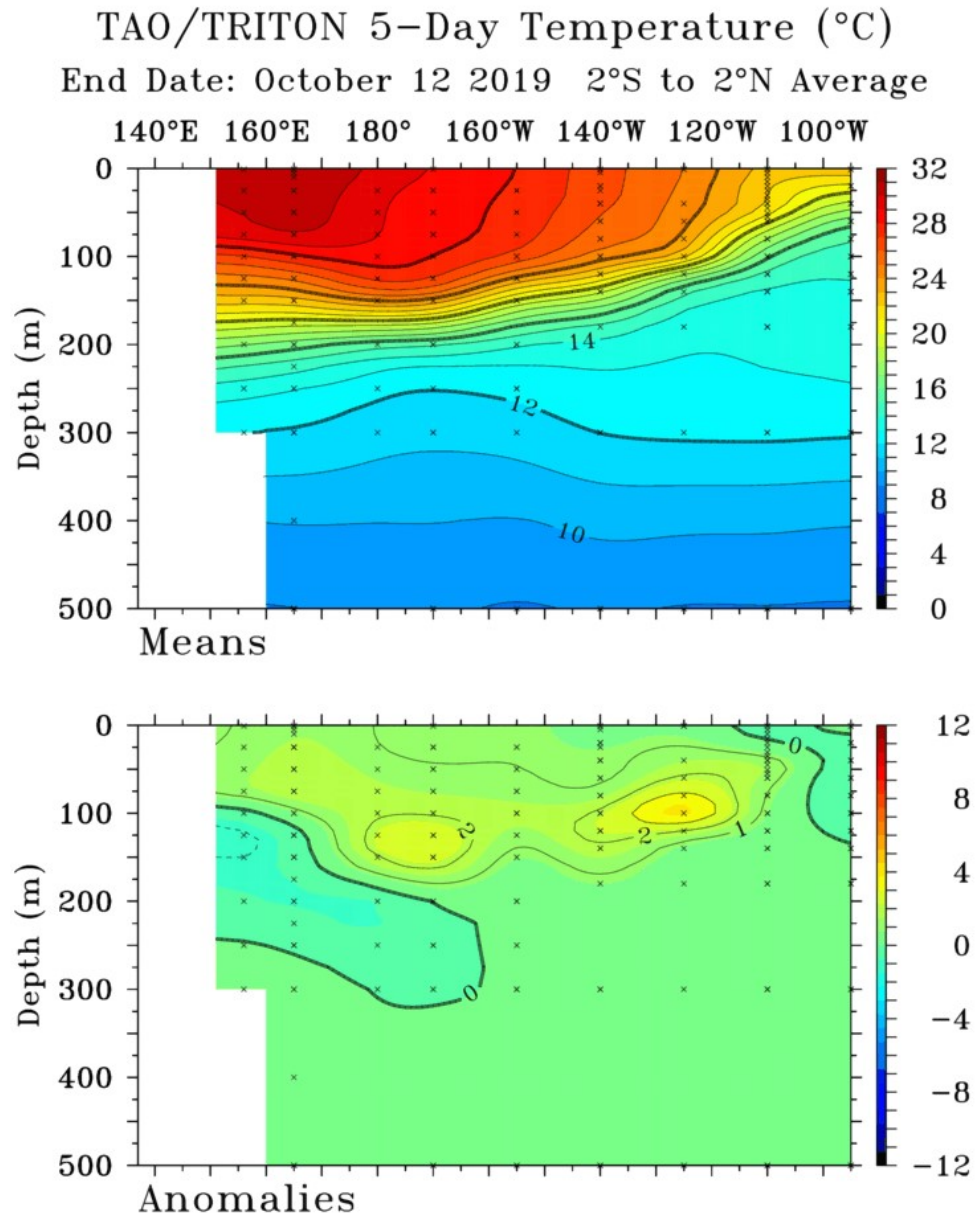


# Equatorial Pacific sub-surface profile

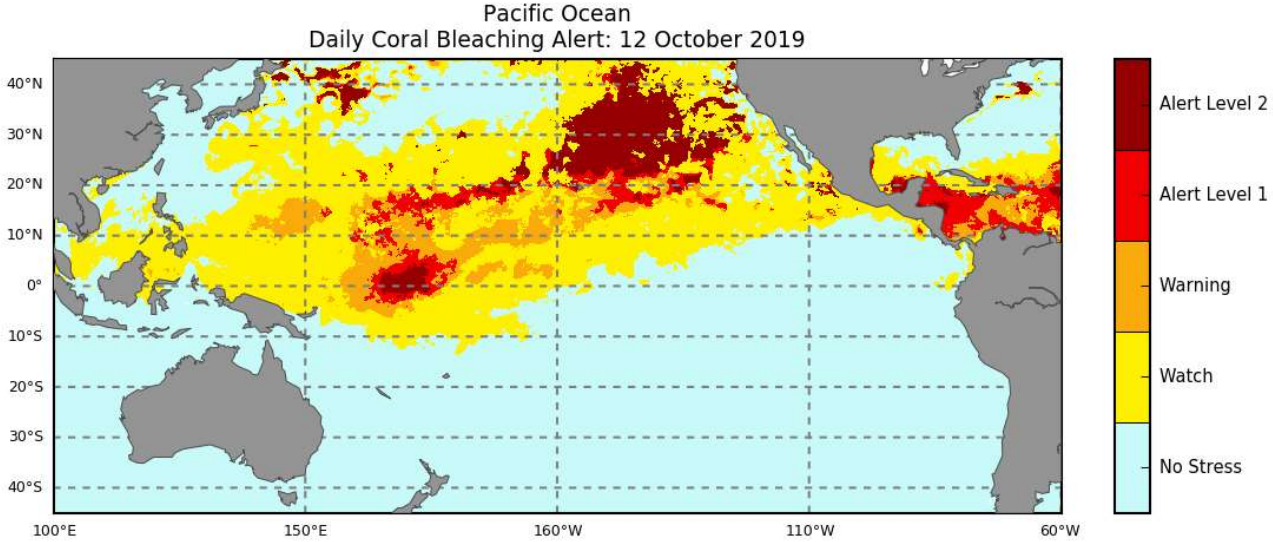
## Bureau of Meteorology



# Equatorial Pacific sub-surface profile

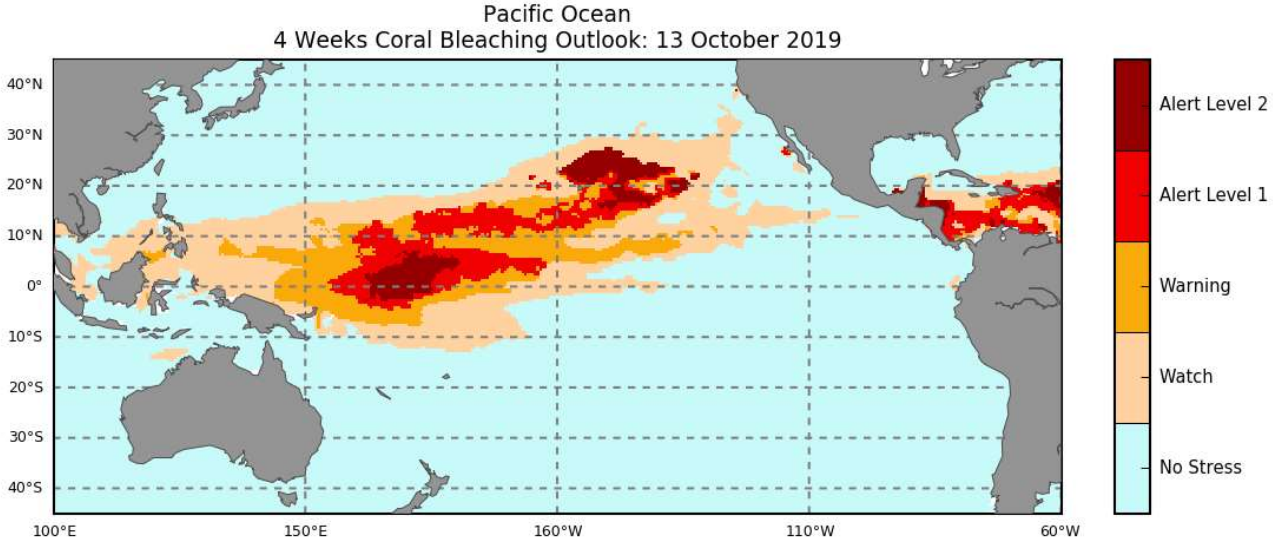


# Coral Bleaching Status



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NOAA Coral Reef Watch

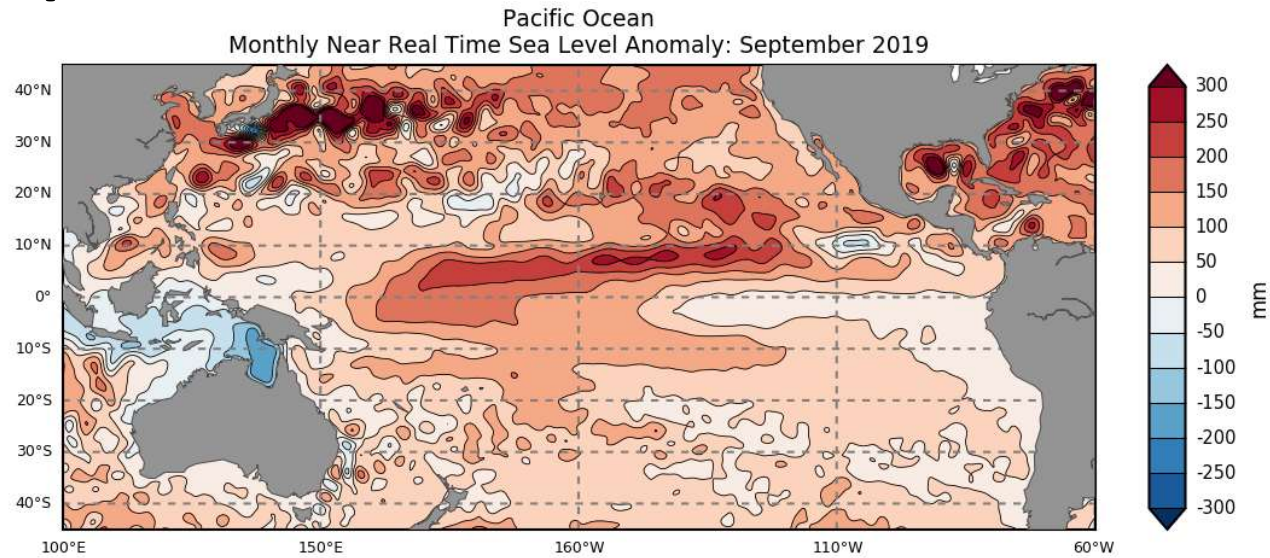


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NOAA Coral Reef Watch

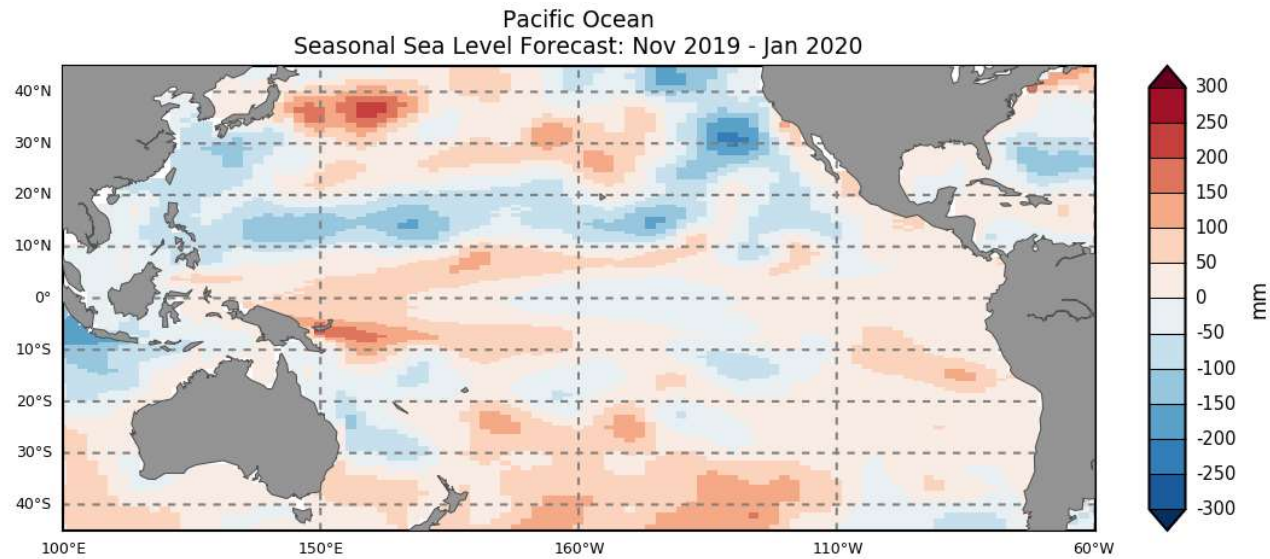


# Sept 2019 Sea Level Anomaly



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AVISO Ssalto/Duacs SLA

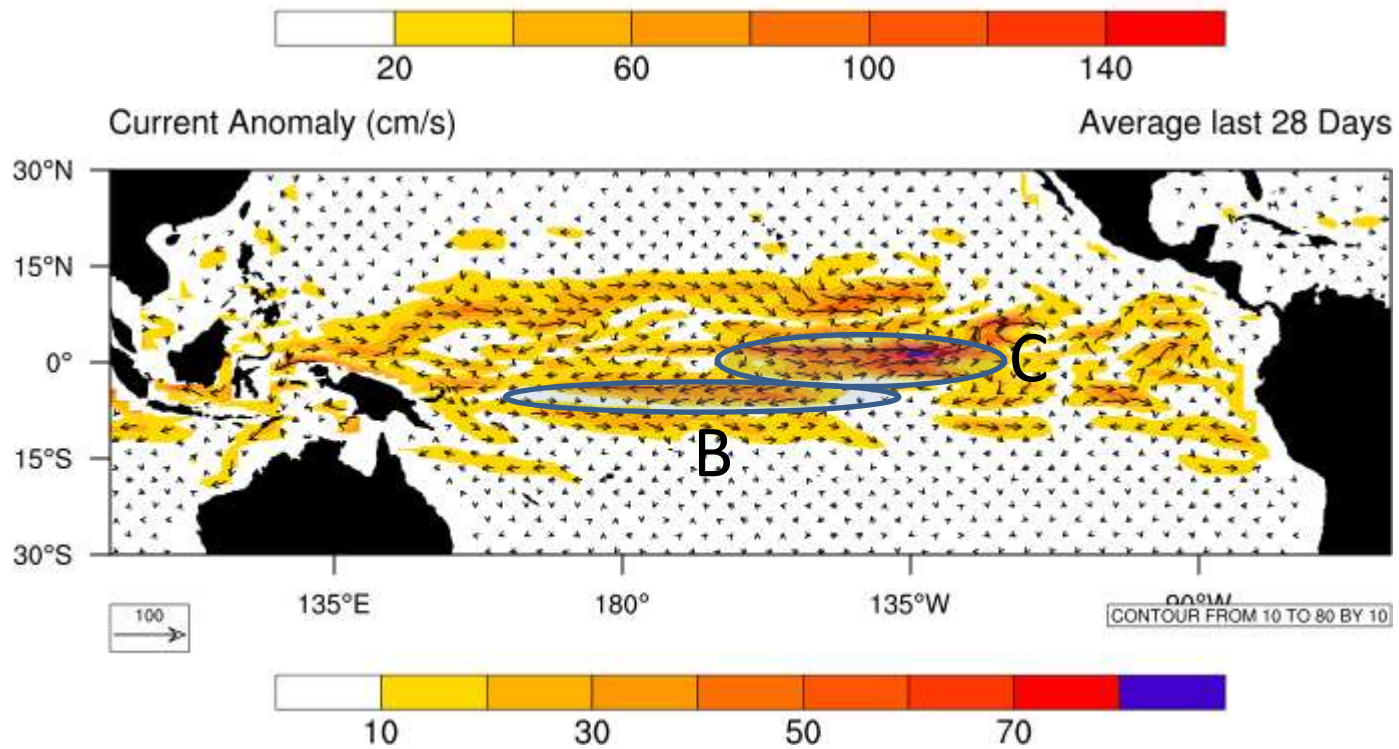
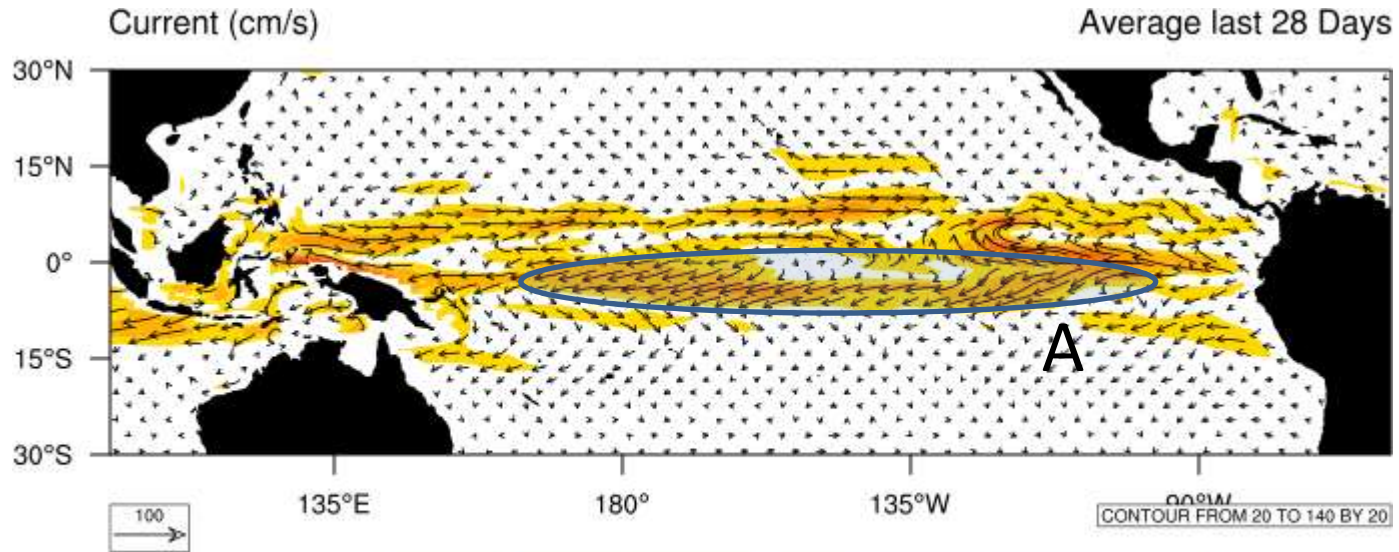


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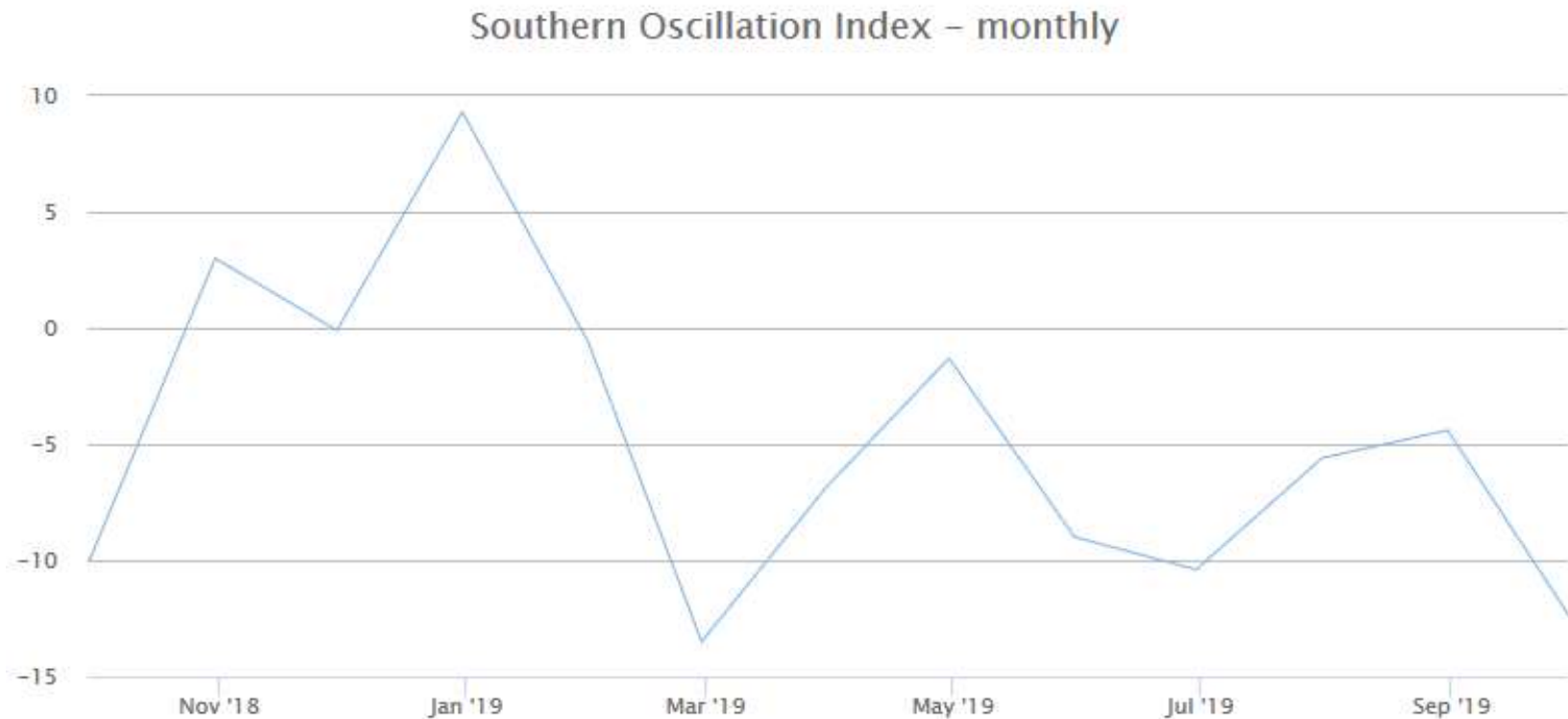
POAMA Forecast



# Ocean Currents at 14 Oct 2019



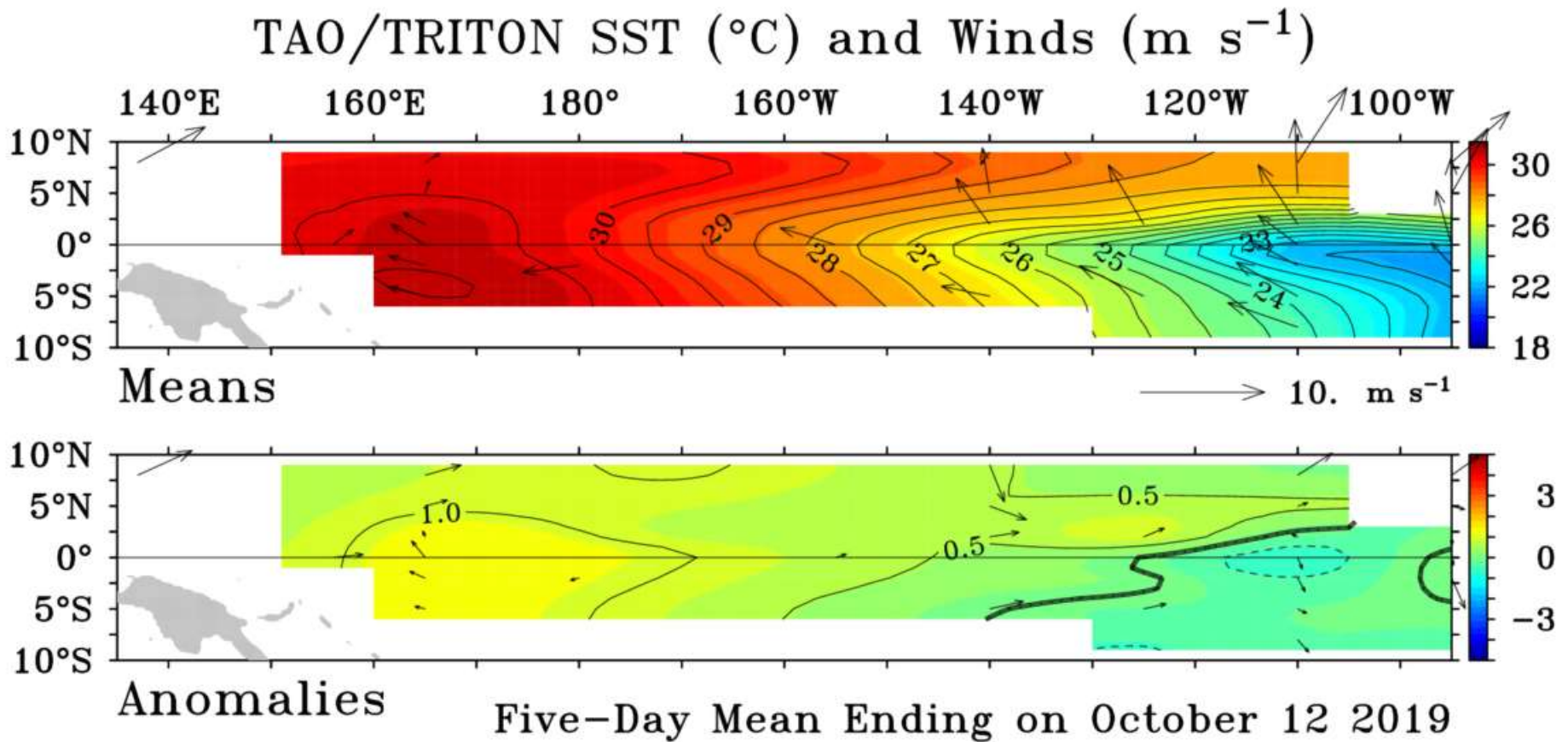
# Southern Oscillation Index



Southern Oscillation Index monthly data												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	-0.6	-13.5	-6.8	-1.3	-9.0	-10.4	-5.6	-4.4	-12.4	-	-	-
2018	8.9	-6.0	10.5	4.5	2.1	-5.5	1.6	-6.9	-10.0	3.0	-0.1	9.3

At 13 October 2019: 30-day SOI = -9; 90-day SOI = -7

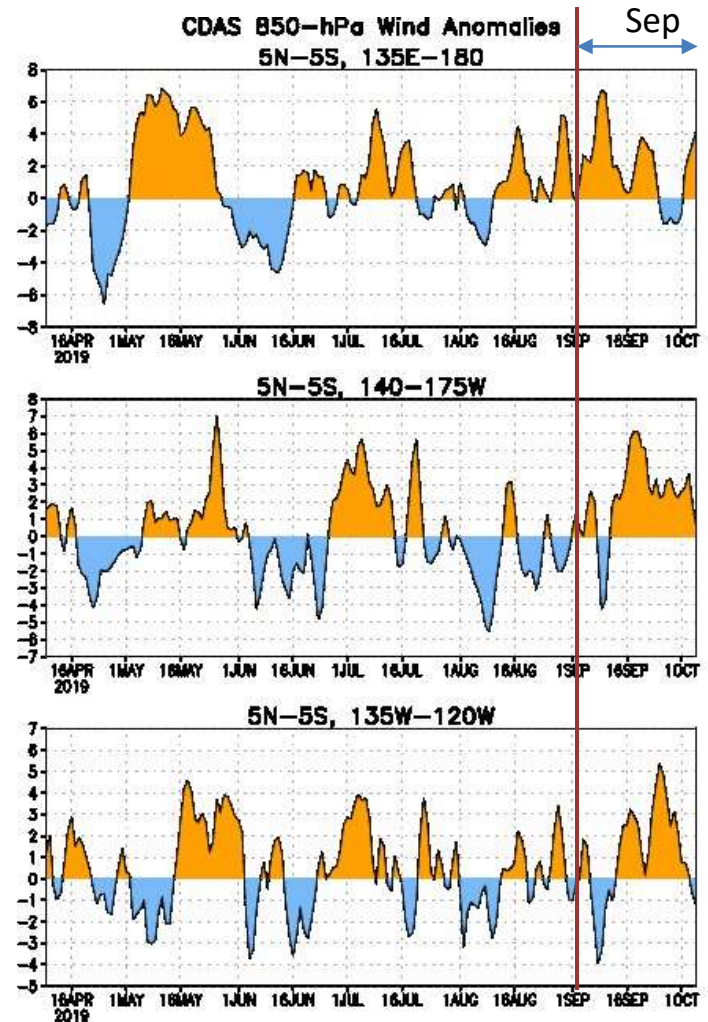
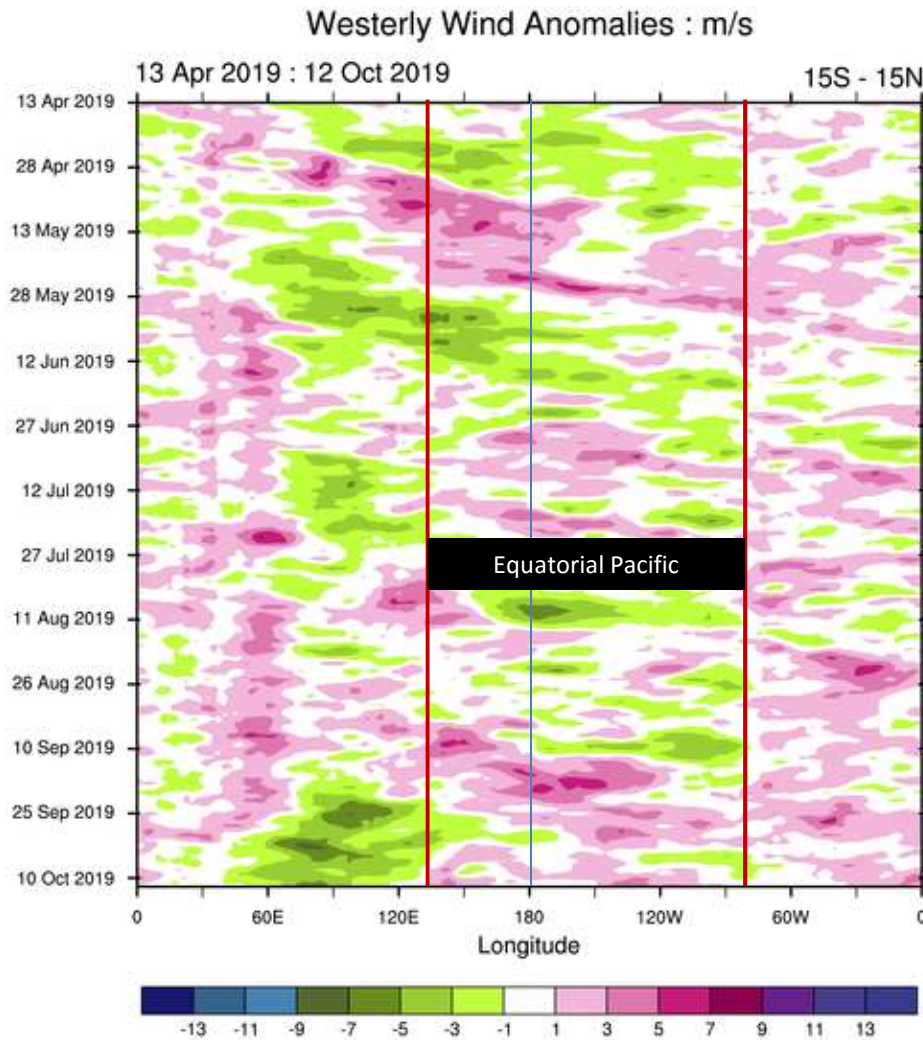
# Equatorial Trade Winds



*Global Tropical Moored Buoy Array Program Office, NOAA/PMEL*



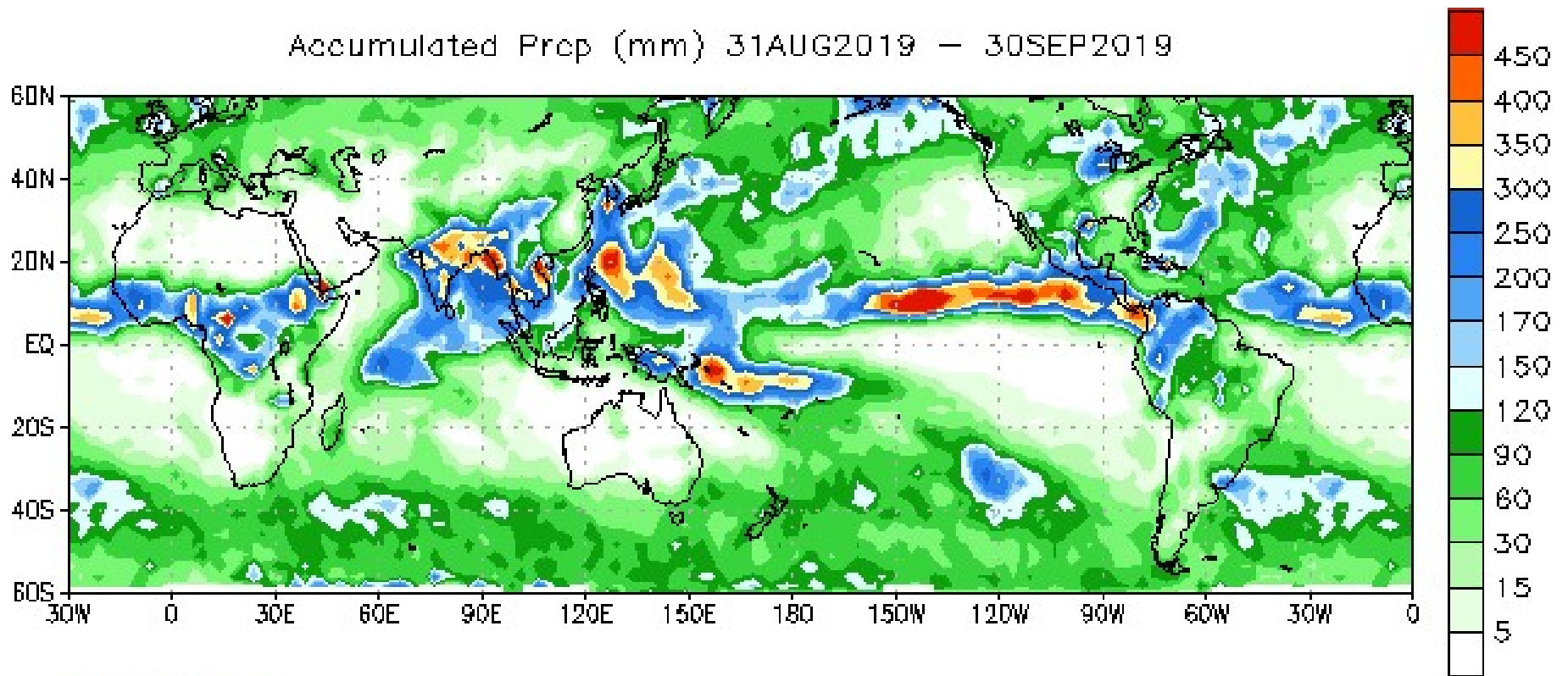
# Equatorial Trade Winds



Data updated through 05 OCT 2019  
**CLIMATE PREDICTION CENTER/NCEP**

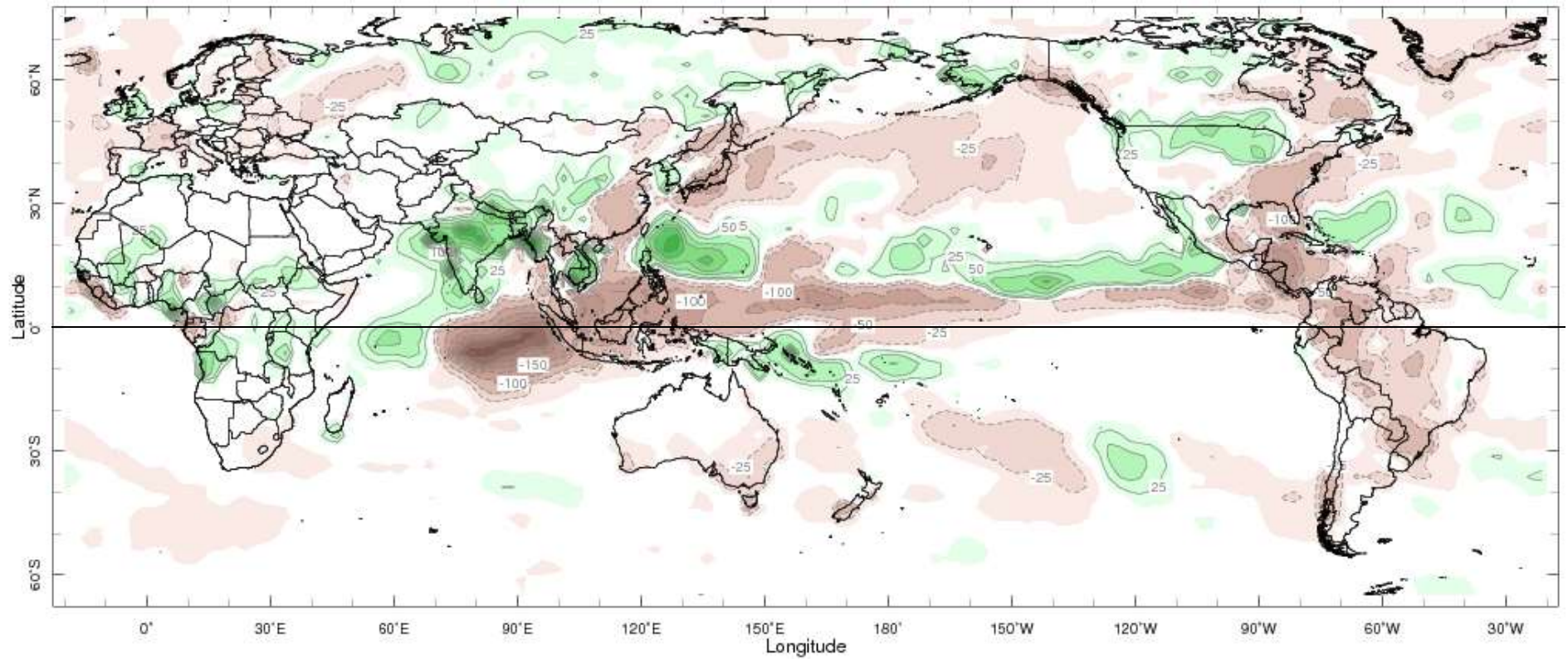
# Satellite Rainfall

Accumulated Prop (mm) 31AUG2019 – 30SEP2019



Data Source: NCEP CMAP Precipitation

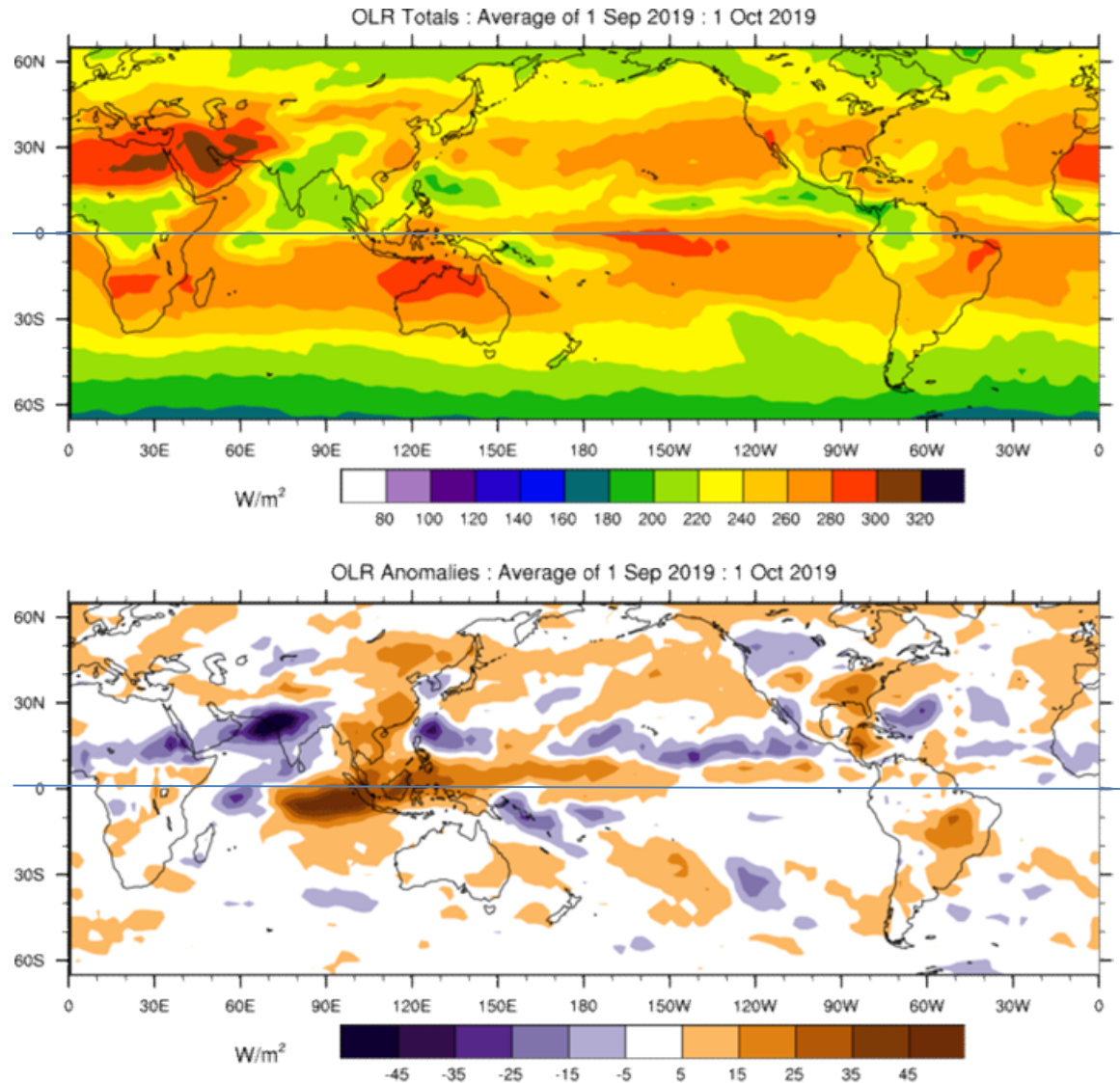
# Satellite Rainfall



Sep 2019



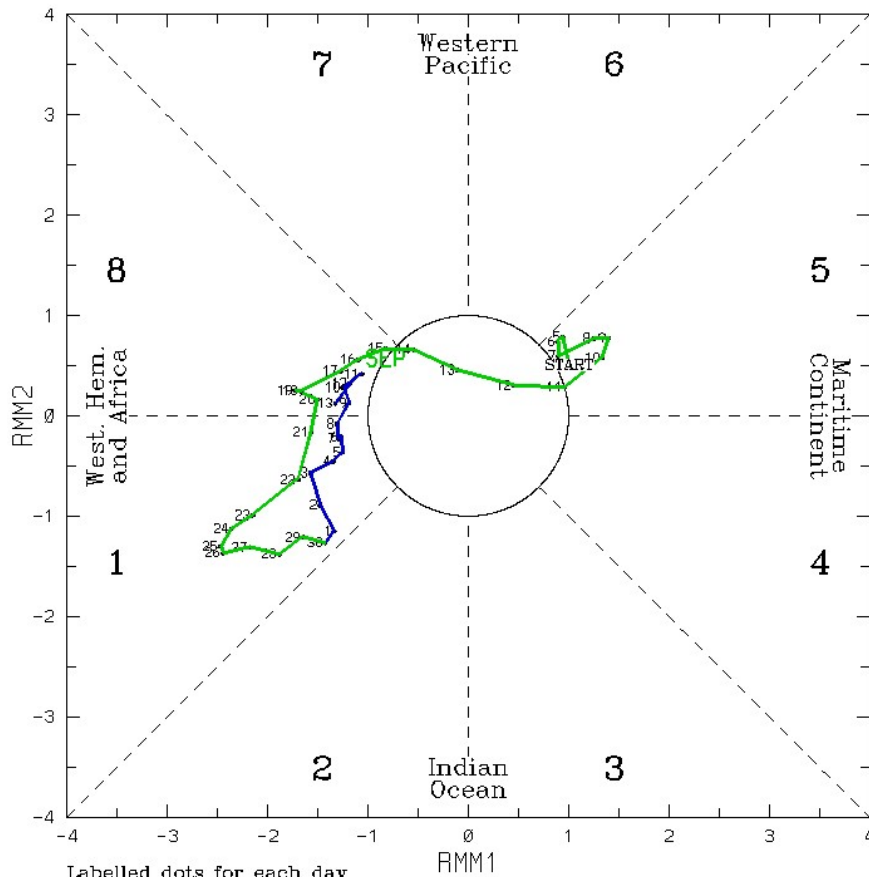
# Outgoing Longwave Radiation (OLR)



30 Days

# Madden-Julian Oscillation

(RMM1, RMM2) phase space for 4-Sep-2019 to 13-Oct-2019



Labeled dots for each day.

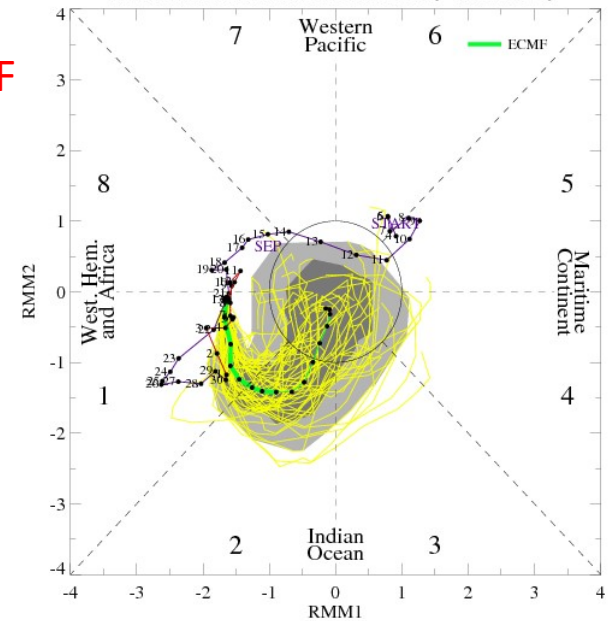
Blue line is for Oct, green line is for Sep, red line is for Aug.

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2019

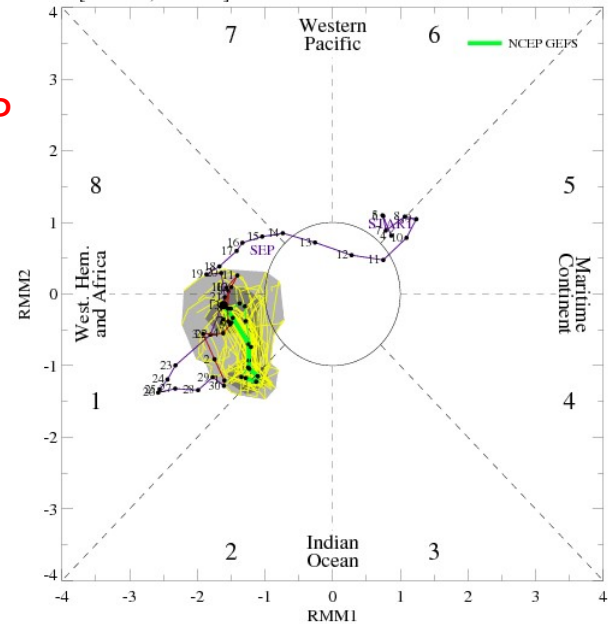
ECMWF

MJO Index Forecast for 14Oct2019-28Oct2019



NCEP

[RMM1, RMM2] forecast for Oct-14-2019 to Oct-28-2019

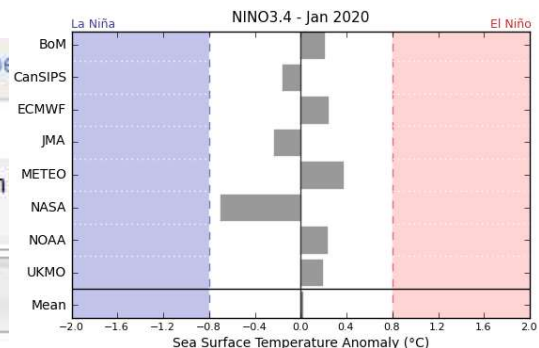


# Climate Model Summary for November to March 2020

Subscribe

Issued 14 October 2019 Updated 15 October 2019 Next issue 12 November 2019

Australian climate is influenced by temperature patterns in the Pacific and Indian Oceans. This page provides information on Ocean outlooks for the coming six months based on a survey of international climate models.



Overview

Pacific Ocean

Indian Ocean

Bureau model

Models

Related information

## Positive IOD strengthens, but influence likely to weaken in early summer

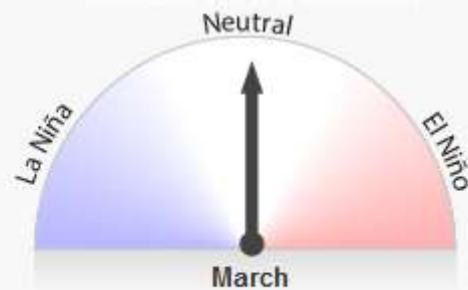
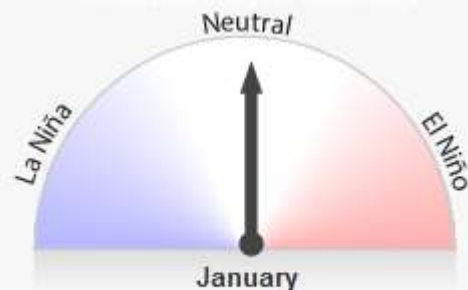
The positive IOD (Indian Ocean Dipole) has gained strength over the past month and is likely to maintain strong positive values until at least the end of spring. A positive IOD typically means below average winter–spring rainfall for much of southern and central Australia.

IOD events are unable to form, and therefore influence Australian climate, during the summer months once the monsoon trough transitions into the southern hemisphere, typically from December to April. As a result, the prolonged and widespread dry signal over much of Australia during 2019 (related to this strong positive IOD event) is likely to weaken during summer.

The El Niño–Southern Oscillation (ENSO) is currently neutral. The latest outlooks from the surveyed models suggest that an ENSO-neutral state is the most likely scenario for the remainder of 2019 and into the first quarter of 2020.

Further details: [ENSO Wrap-Up](#) ( ENSO and IOD ); [Climate Outlooks](#)

## Average of international model outlooks for NINO3.4





# Climate Model Summary

