

ENSO update - OCOF 152

13 May 2020

ENSO Wrap-up

ENSO Wrap-Up

Current state of the Pacific and Indian oceans

Issued 12 May 2020 Next issue 26 May 2020

Overview

Sea surface

Sea sub-surface

SOI

Trade winds

Cloudiness

Outlooks

Indian Ocean



Negative Indian Ocean Dipole possible in 2020, tropical Pacific likely to cool

Both the El Niño–Southern Oscillation (ENSO) and Indian Ocean Dipole (IOD) are currently neutral. However, all models surveyed suggest the possibility of a negative IOD developing in the Indian Ocean from the middle of the southern hemisphere winter. Some model outlooks also suggest a La Niña-like state in the tropical Pacific Ocean is possible later in the southern hemisphere winter or spring.

While all models show that a negative IOD is more likely than not, individual models show a broad spread of likely scenarios covering both the neutral IOD and negative IOD range. Additionally, accuracy of IOD forecasts made during autumn have lower accuracy than at other times of year, but accuracy improves in winter. A negative IOD typically brings above average winter–spring rainfall to southern Australia.

Key indicators of ENSO, such as the Southern Oscillation Index (SOI), trade winds, cloudiness near the Date Line, and sea surface temperatures in the tropical Pacific Ocean, all persist at levels consistent with neutral ENSO. However, sea surface temperatures in parts of the tropical Pacific Ocean have dropped by around half a degree in the past fortnight. Additionally, sub-surface temperatures in the tropical Pacific Ocean continue to decrease, indicating further potential for cooling at the surface in the coming months under the right conditions.

Most climate models surveyed by the Bureau indicate that ENSO is likely to stay neutral through the southern hemisphere winter. However, in early-to-mid spring, three of the eight models reach or exceed La Niña levels. Like IOD predictions, ENSO predictions made during autumn tend to have lower accuracy than predictions made at other times of the year. This means that current ENSO forecasts should be used with some caution.

While the Bureau's [ENSO Outlook](#) is currently at INACTIVE level, criteria will be assessed regularly for elevation to La Niña WATCH.



ENSO Outlook

BUREAU OF METEOROLOGY

Understanding the IOD

Australian climate drivers

Information and video about Indian Ocean Dipole

INDIAN OCEAN DIPOLE IN AUSTRALIA

WHAT IS IT?

WHEN DO THEY OCCUR?

1982

1974

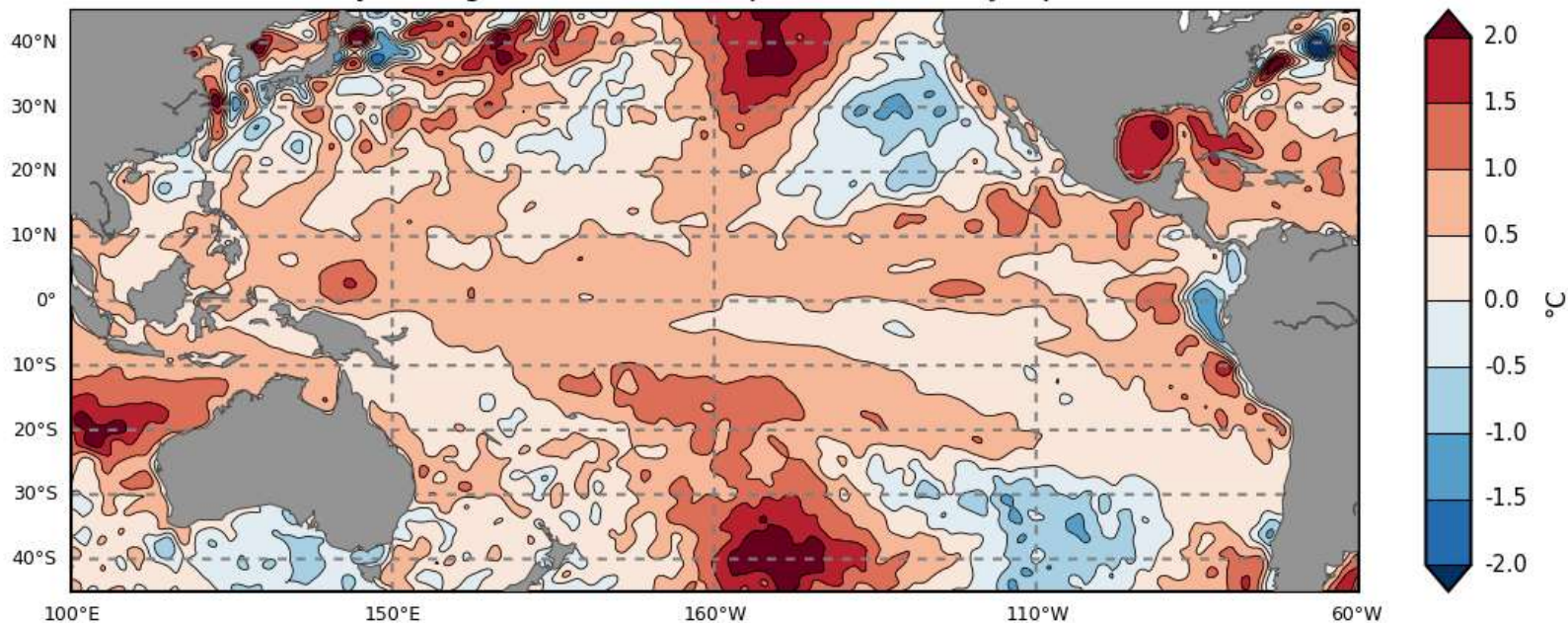
2-7

IOD summary (PDF 4MB)

April 2020 SSTs

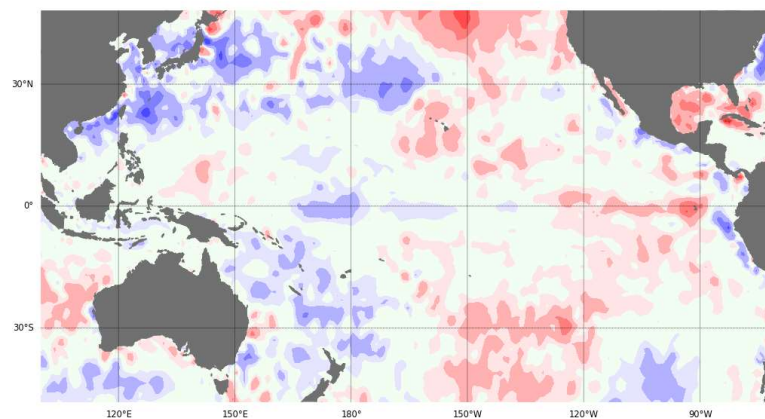
Pacific Ocean

Monthly Average Sea Surface Temperature Anomaly: April 2020



©Pacific Community (SPC) 2020
Geoscience Energy and Maritime Division, COSPPac SPP

Change in the monthly SST anomaly: April-2020 - March-2020

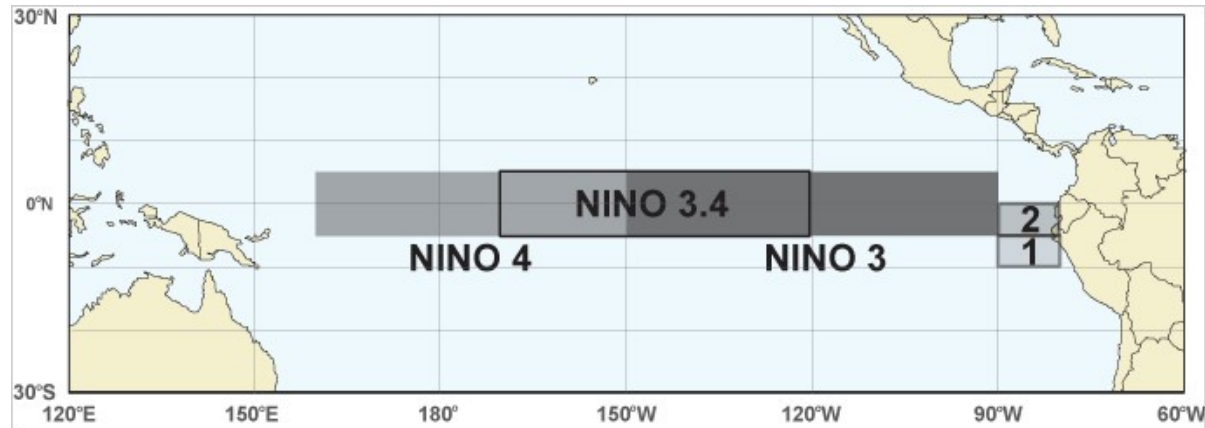


Data: ABOM BNOG
Climatology baseline: 1961 to 1990
© Commonwealth of Australia 2020, Australian Bureau of Meteorology

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

Anomaly monthly difference
Created: 04/05/2020

NINO SST anomalies (°C)

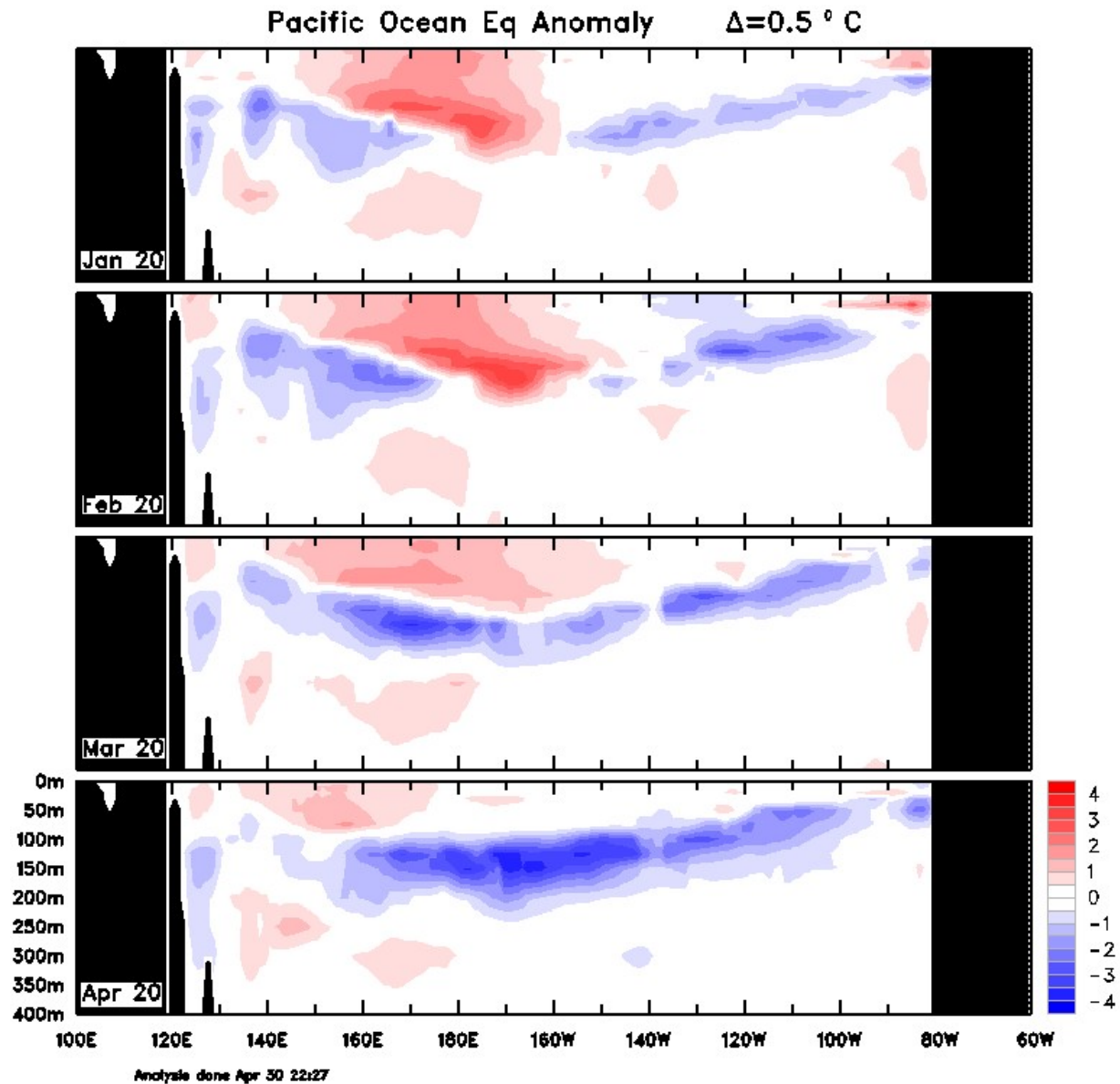


| Index | Mar 2020 | Apr 2020 | Latest weekly |
|---------|----------|----------|---------------|
| NINO3 | +0.3 | +0.5 | +0.2 |
| NINO3.4 | +0.5 | +0.5 | +0.2 |
| NINO4 | +0.7 | +0.5 | +0.2 |

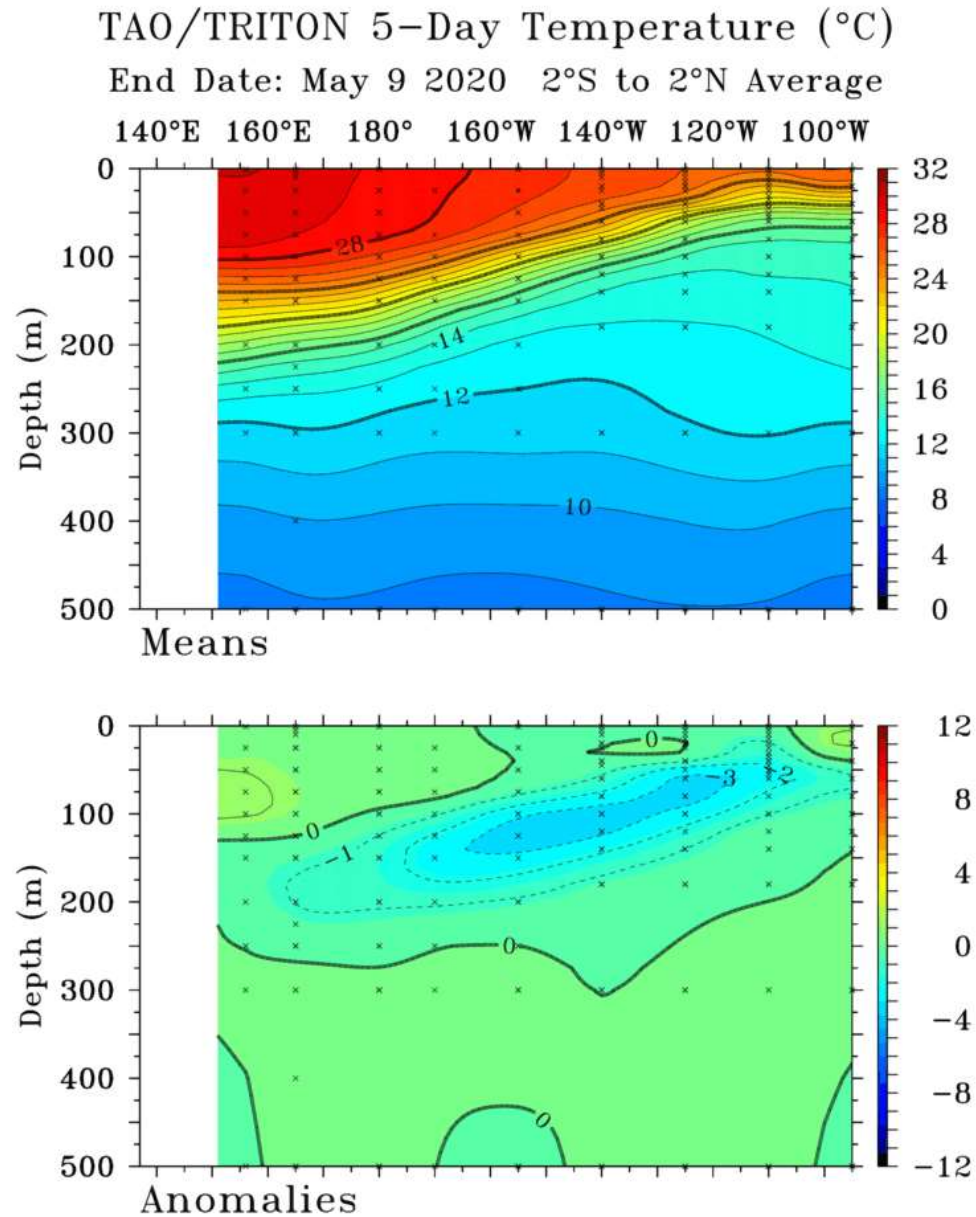
Weekly data for the week ending 10/05/2020

Equatorial Pacific sub-surface profile

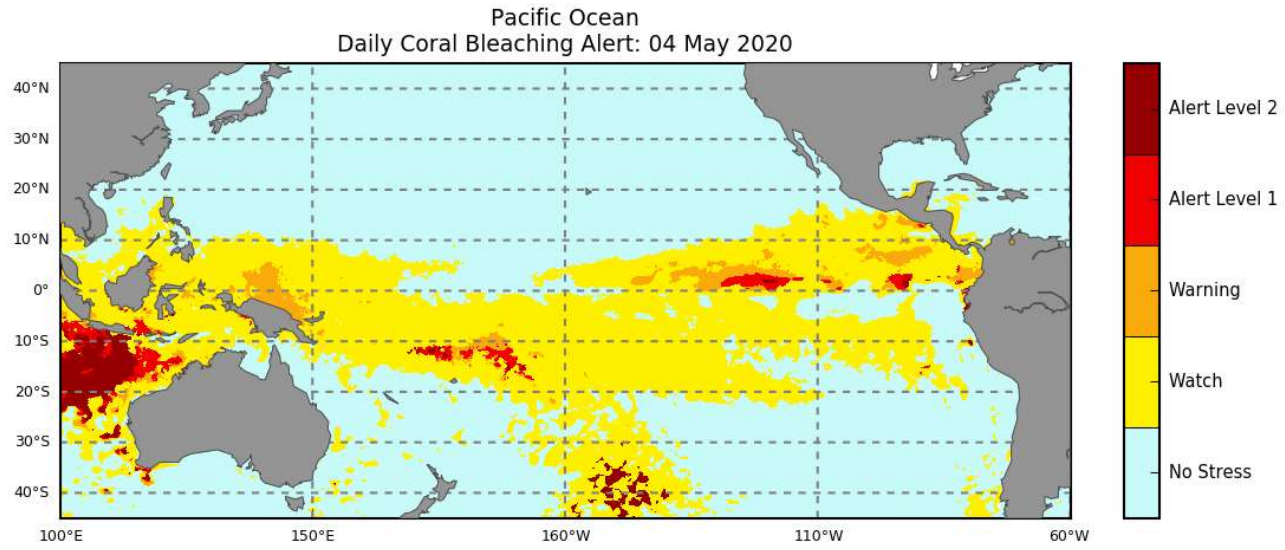
Bureau of Meteorology



Equatorial Pacific sub-surface profile

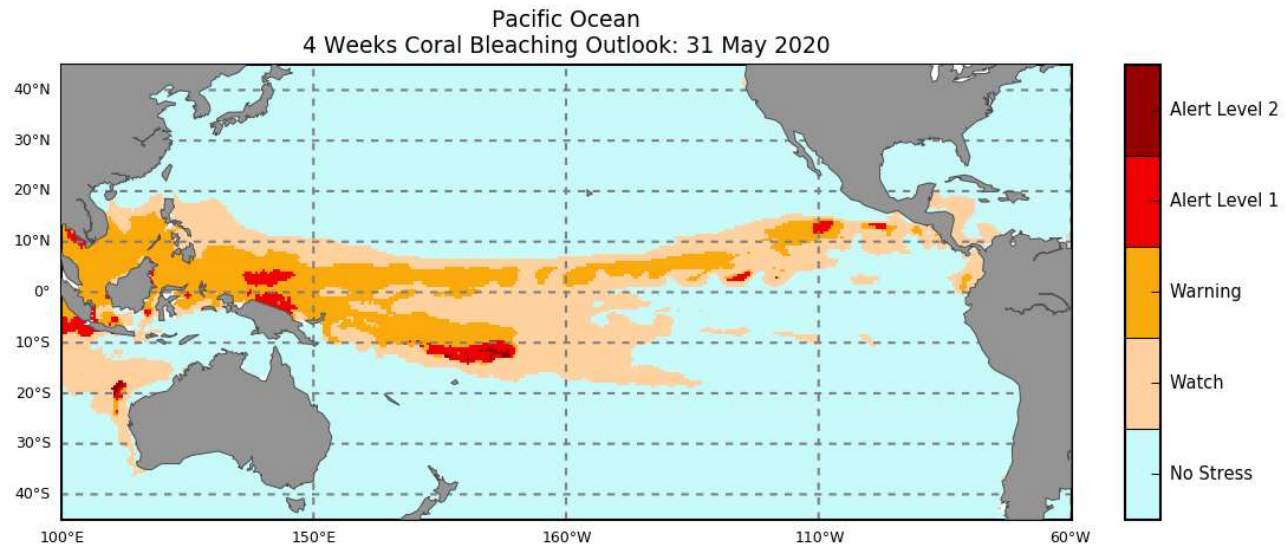


Coral Bleaching Status



©Pacific Community (SPC) 2020
Geoscience Energy and Maritime Division, COSPPac SPP

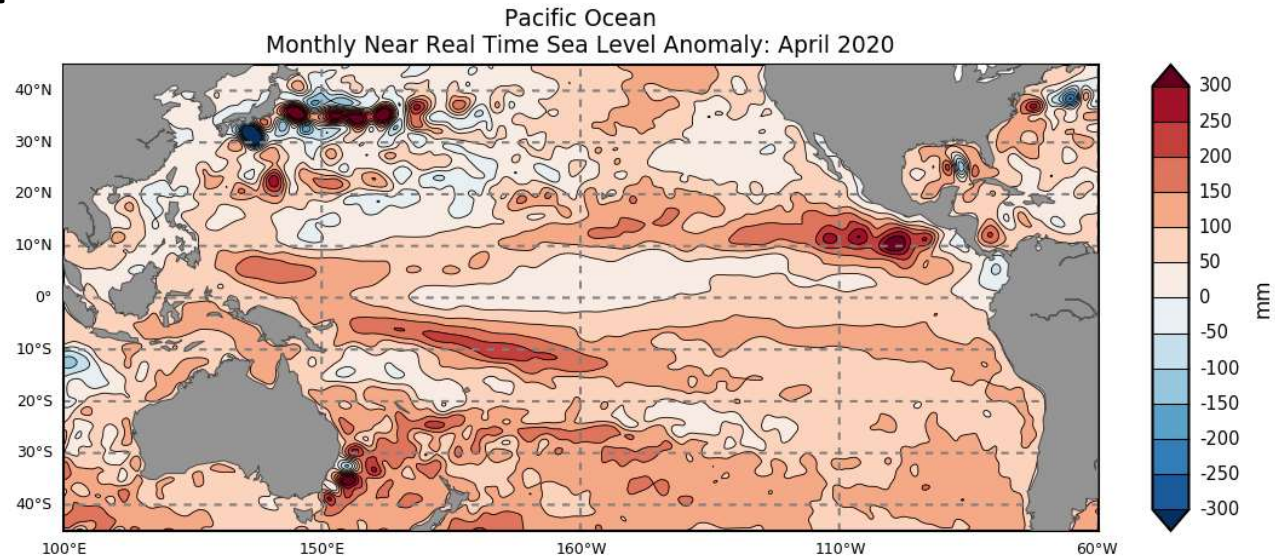
NOAA Coral Reef Watch



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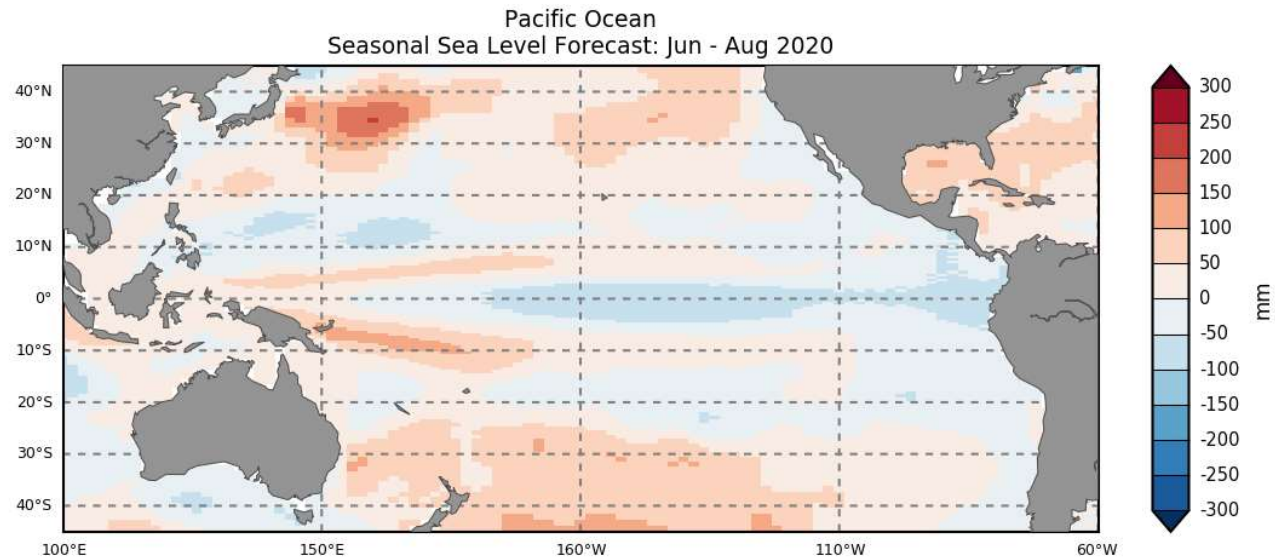
NOAA Coral Reef Watch

April 2020 Sea Level Anomaly



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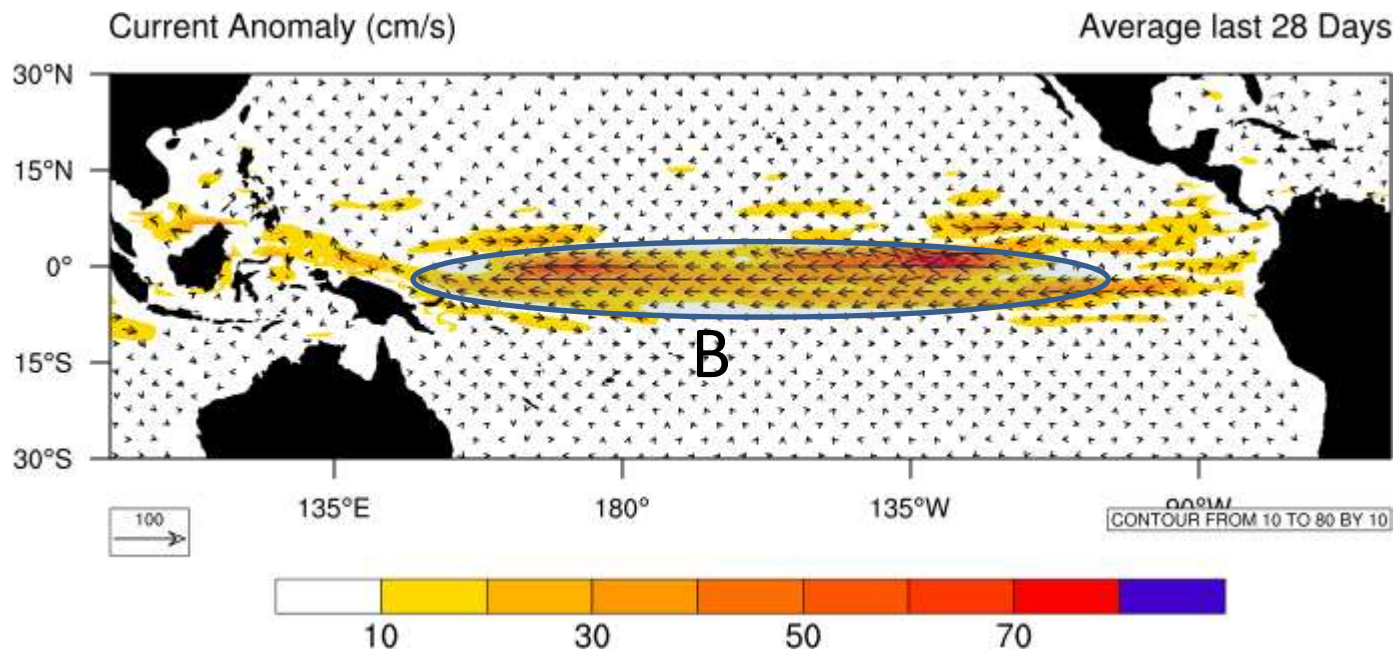
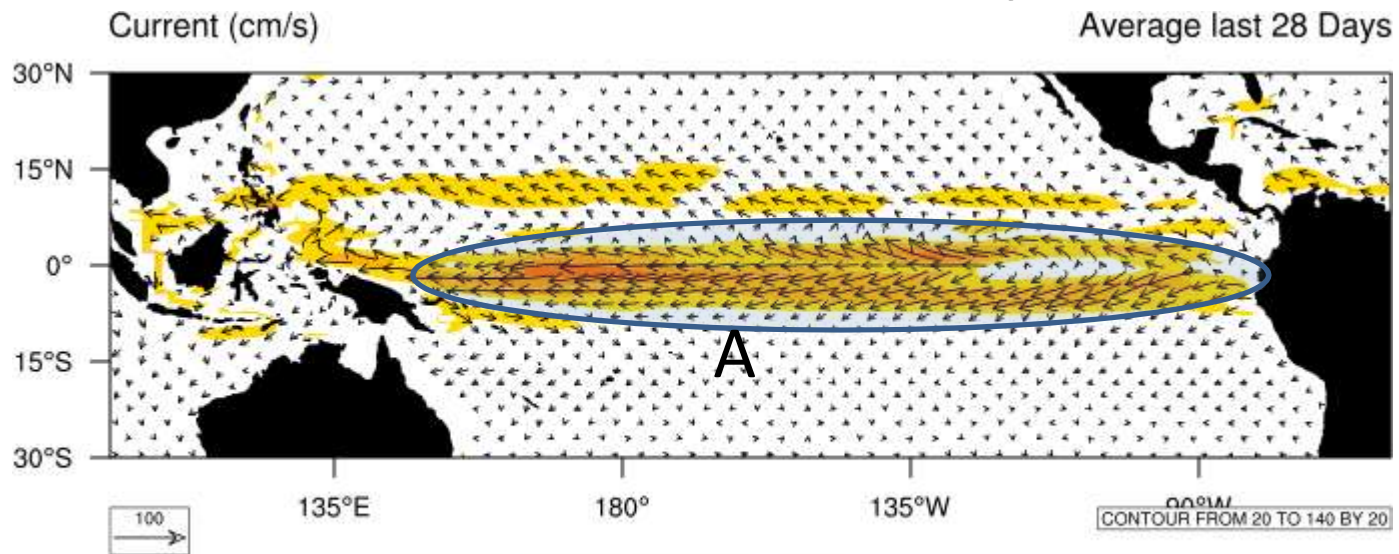
AVISO Ssalto/Duacs SLA



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POAMA Forecast

Ocean Currents at 7 May 2020



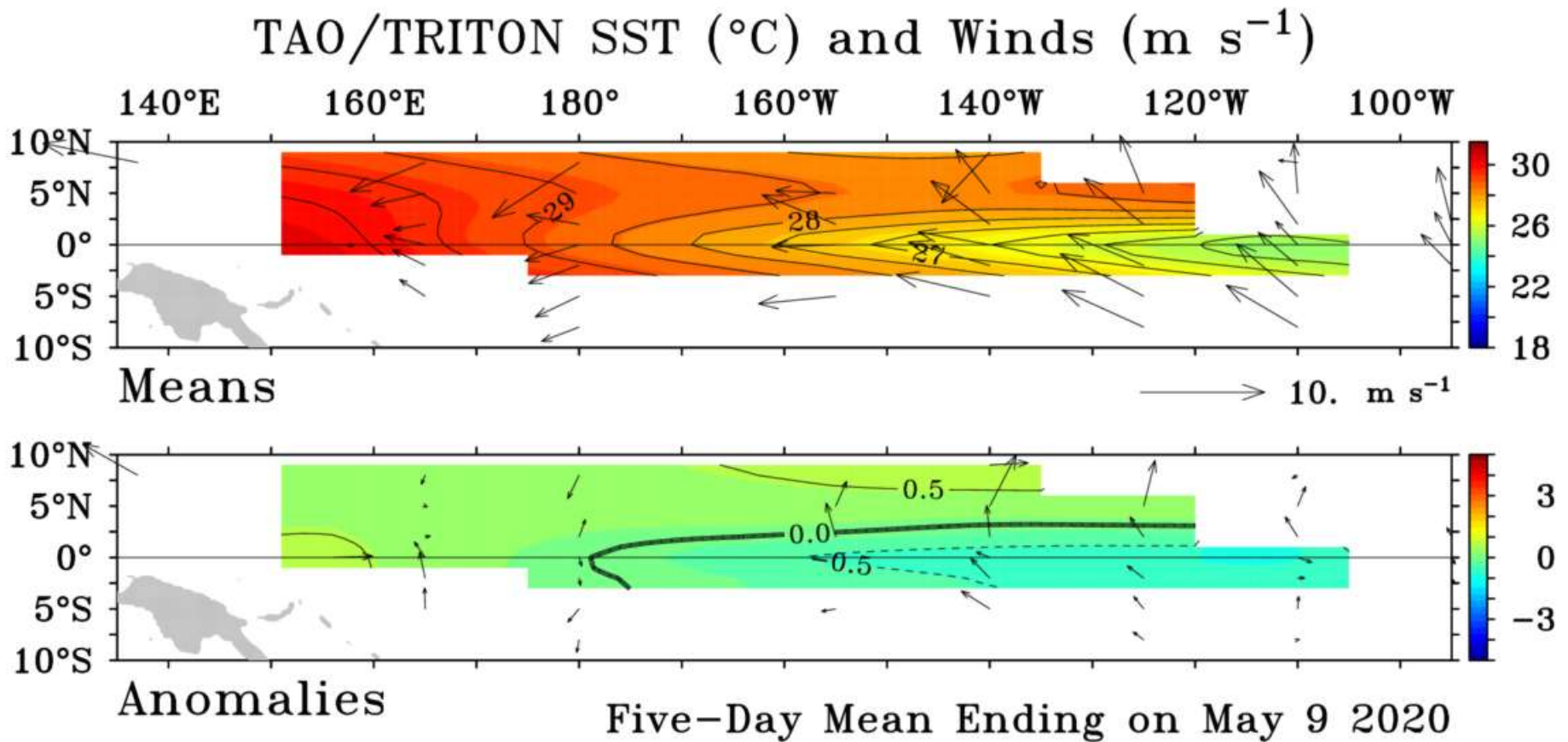
Southern Oscillation Index



| Southern Oscillation Index monthly data | | | | | | | | | | | | |
|---|------|-------|------|------|------|-------|------|------|-------|------|------|------|
| Year | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| 2020 | 1.3 | -2.2 | -5.2 | -0.5 | - | - | - | - | - | - | - | - |
| 2019 | -0.6 | -13.5 | -6.8 | -1.3 | -9.0 | -10.4 | -5.6 | -4.4 | -12.4 | -5.6 | -9.3 | -5.5 |

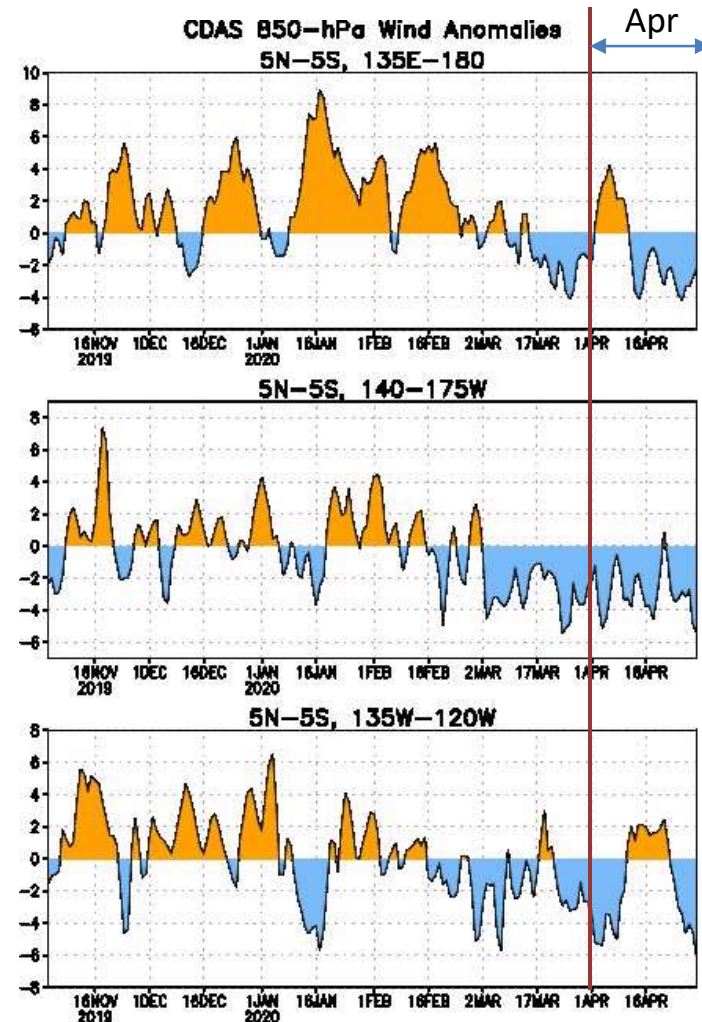
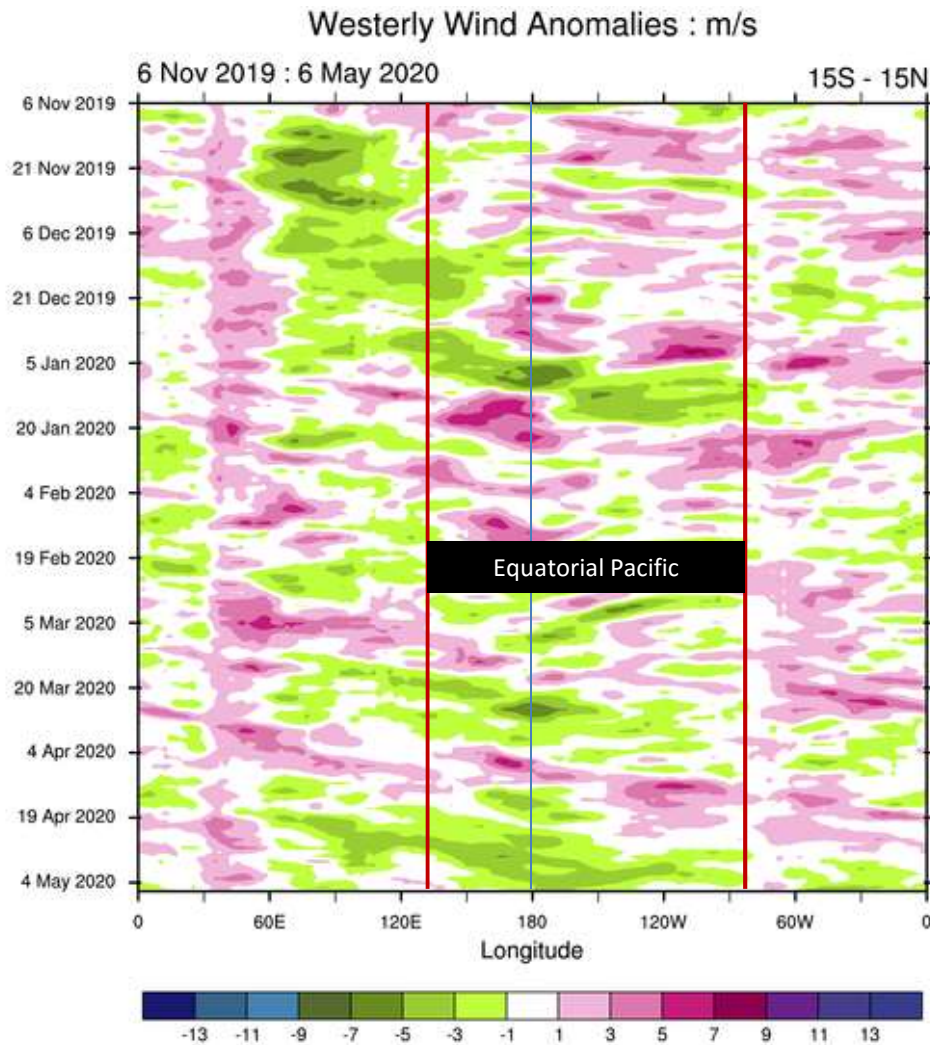
At 10 May 2020: 30-day SOI = +1; 90-day SOI = -4

Equatorial Trade Winds



Global Tropical Moored Buoy Array Program Office, NOAA/PMEL

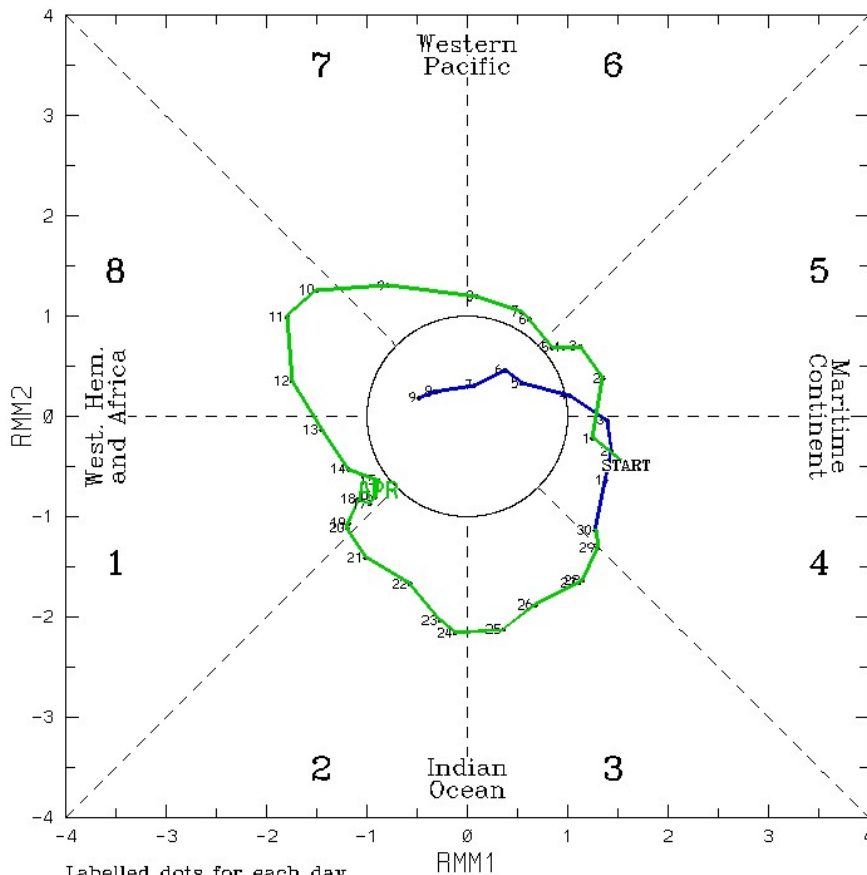
Equatorial Trade Winds



Data updated through 30 APR 2020
CLIMATE PREDICTION CENTER/NCEP

Madden-Julian Oscillation

(RMM1, RMM2) phase space for 31-Mar-2020 to 9-May-2020



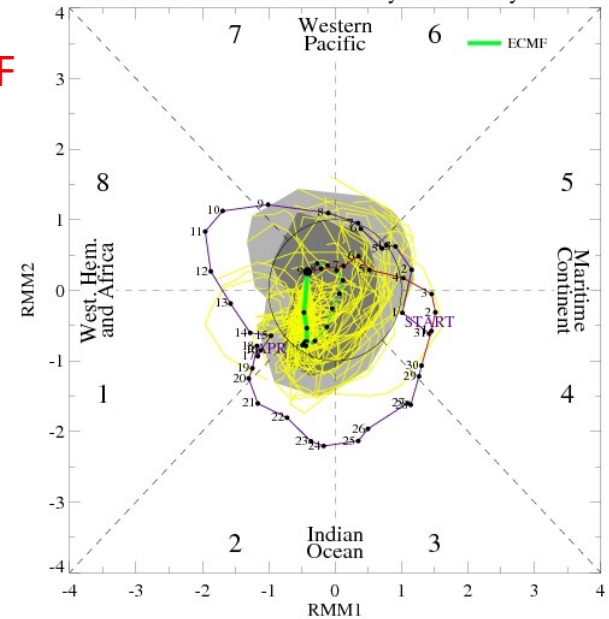
Labelled dots for each day.

Blue line is for May, green line is for Apr, red line is for Mar.

(C) Copyright Commonwealth of Australia 2020. Bureau of Meteorology
2020

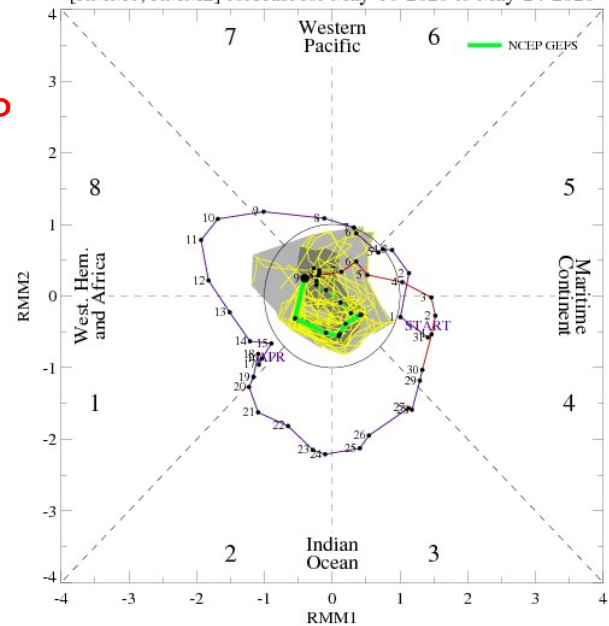
ECMWF

MJO Index Forecast for 10May2020-24May2020



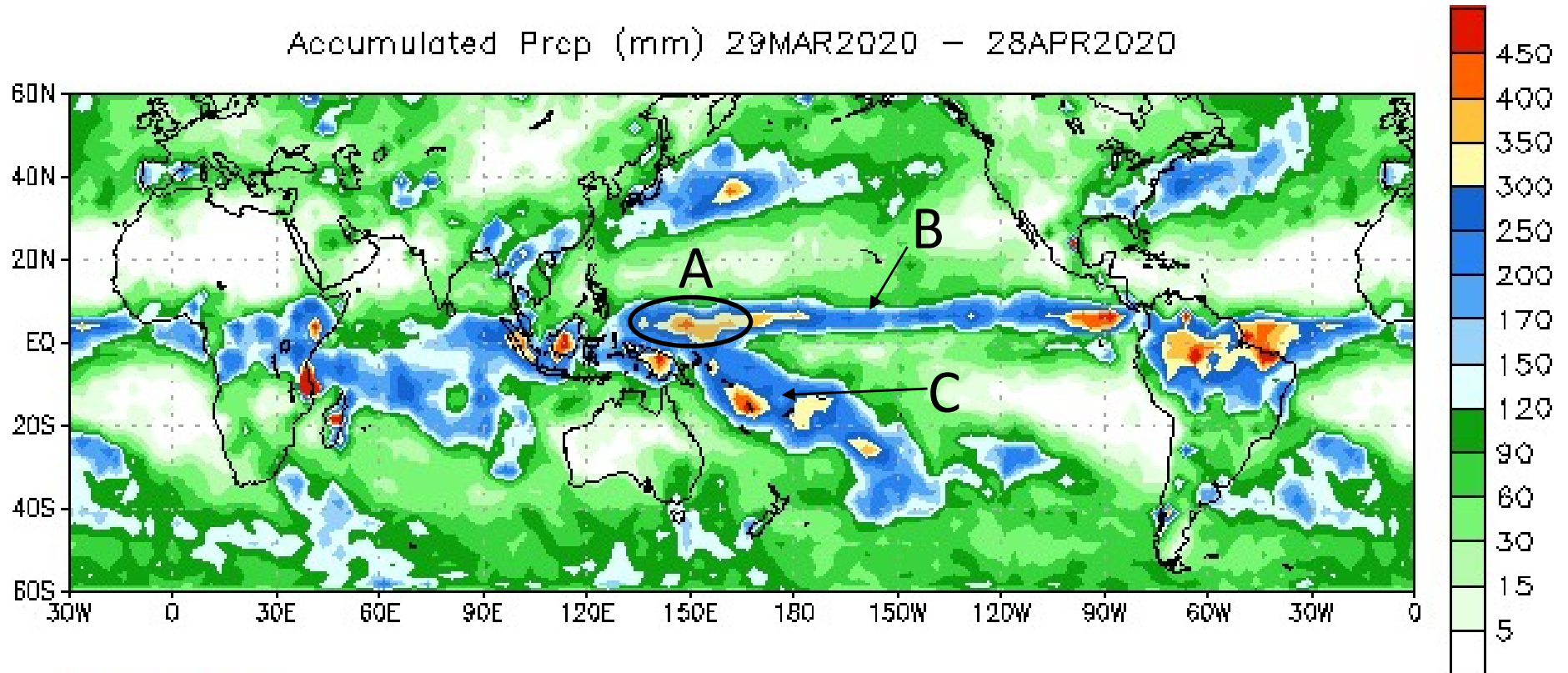
NCEP

[RMM1, RMM2] forecast for May-10-2020 to May-24-2020



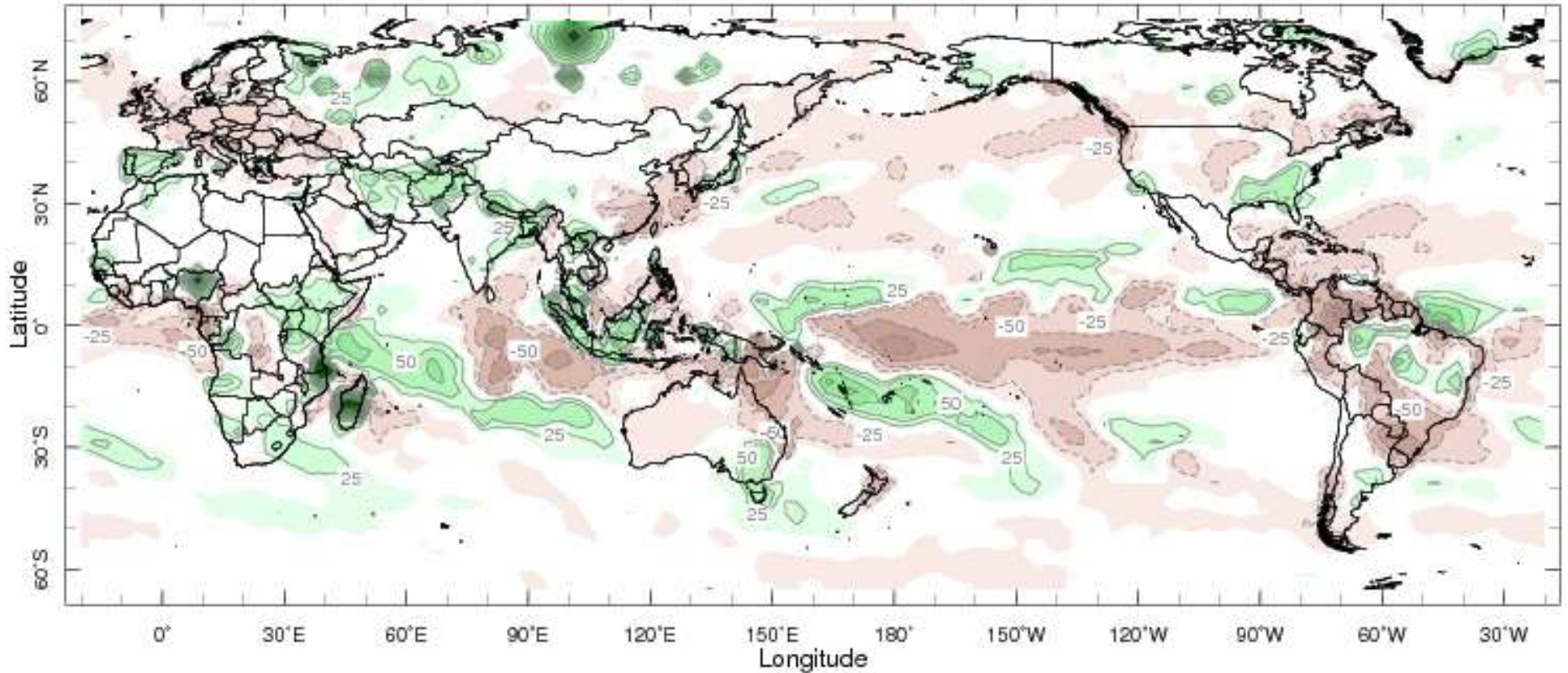
Satellite Rainfall

Accumulated Prep (mm) 29MAR2020 – 28APR2020



Data Source: NCEP CMAP Precipitation

Satellite Rainfall Anomaly

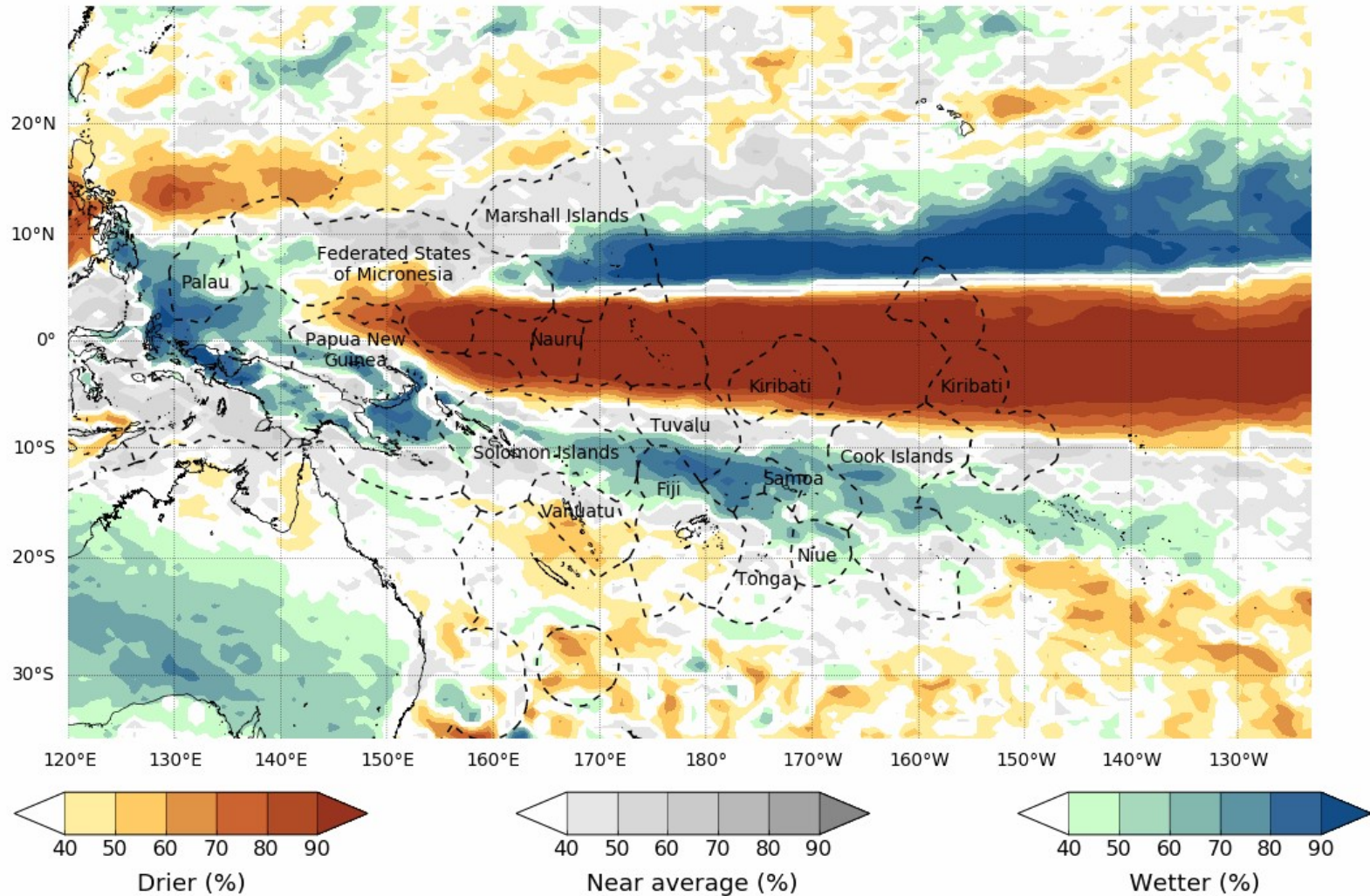


Apr 2020

Units = mm per month

Model Rainfall Predictions (MJJ)

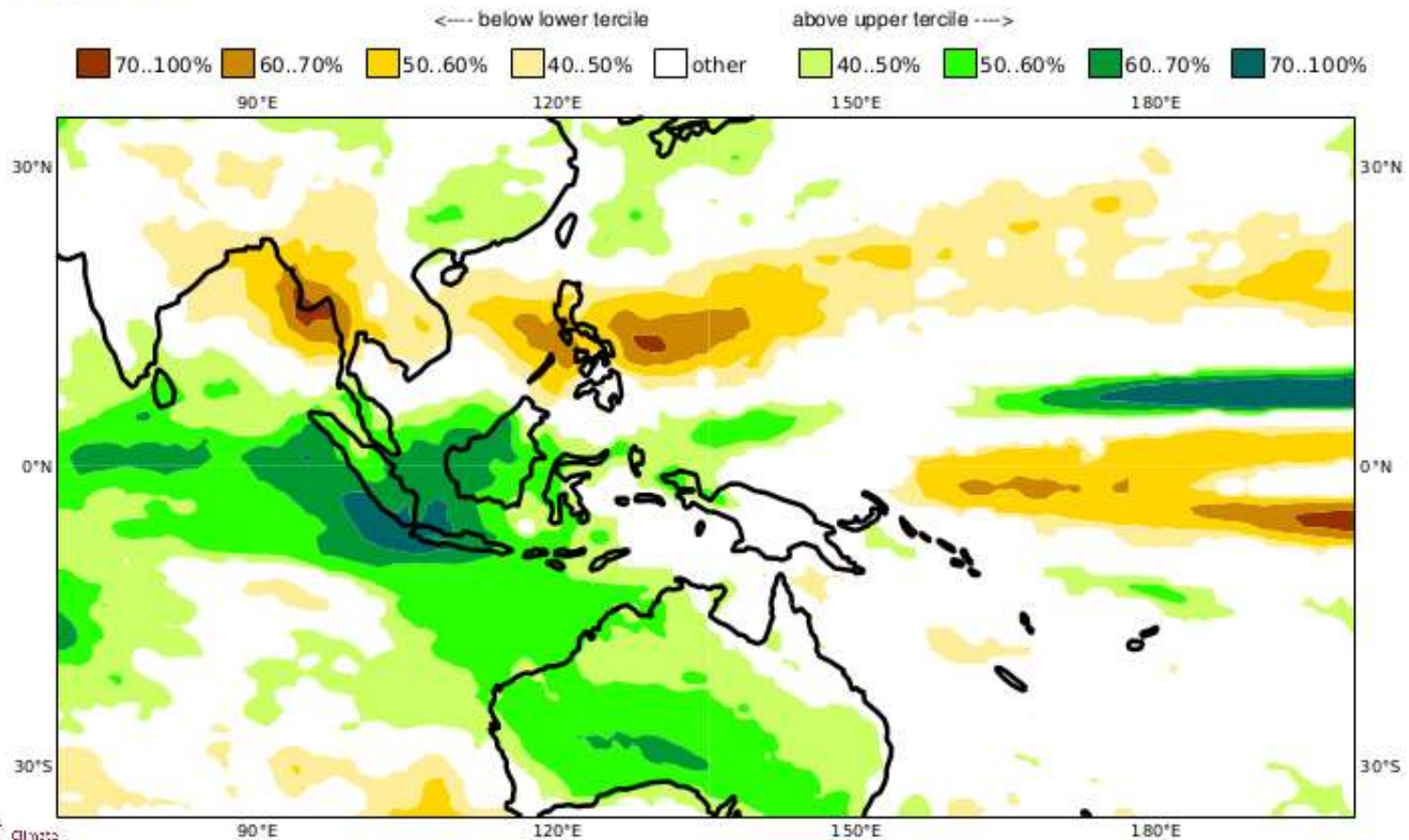
Tercile rainfall probabilities for
May to July 2020



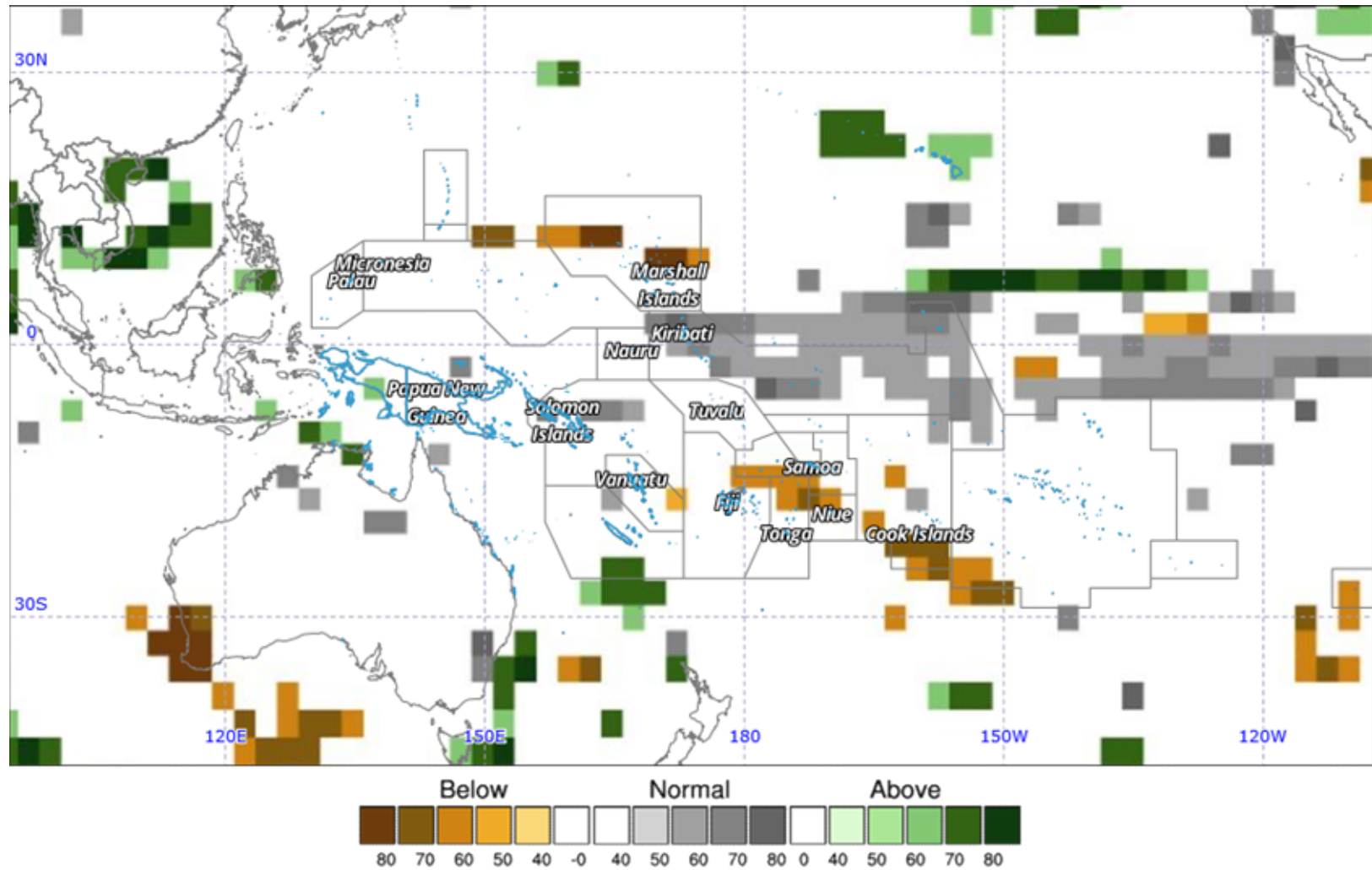
Model Rainfall Predictions (MJJ)

C3S multi-system seasonal forecast
Prob(most likely category of precipitation)
Nominal forecast start: 01/04/20
Unweighted mean

ECMWF/Met Office/Météo-France/CMCC/DWD/NCEP
MJJ 2020



Model Rainfall Predictions (MJJ)



Year: 2020, Season: MJJ, Lead Month: 3, Method: GAUS

Model: APCC

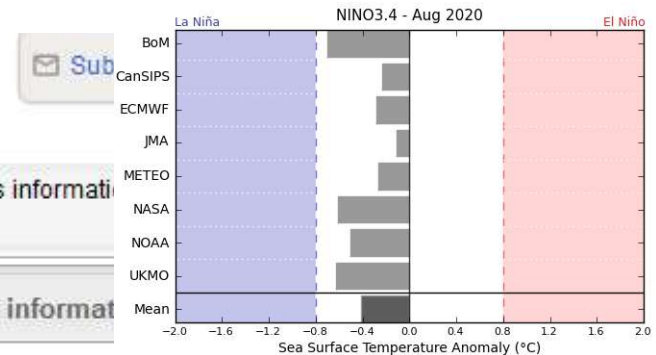
Generated using CLIK® (2020-5-8)

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Climate Model Summary for June to October 2020

Issued 12 May 2020 Next issue 12 June 2020

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



Overview Pacific Ocean Indian Ocean Bureau model Models Related information

Models suggest negative IOD development possible from mid-winter

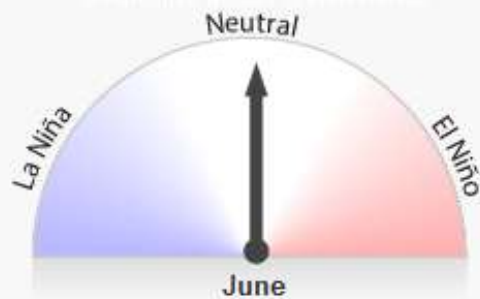
The Indian Ocean Dipole (IOD) is currently neutral but the latest model outlooks indicate a negative IOD could develop during the southern winter. A negative IOD typically brings above average winter-spring rainfall to southern Australia.

The El Niño–Southern Oscillation (ENSO) is also neutral. Latest outlooks from the surveyed models suggest that an ENSO-neutral state is the most likely scenario until the end of winter 2020. However, some models are suggesting the development of La Niña could occur in early-to-mid spring.

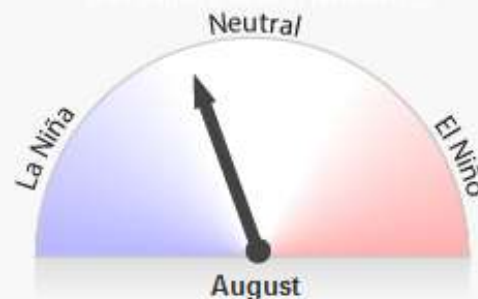
These outlooks will be monitored closely over the coming weeks, as ENSO and IOD predictions made during autumn tend to have lower accuracy than predictions made at other times of year.

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

Average of international model outlooks for NINO3.4



SST anomaly: $-0.1\text{ }^{\circ}\text{C}$

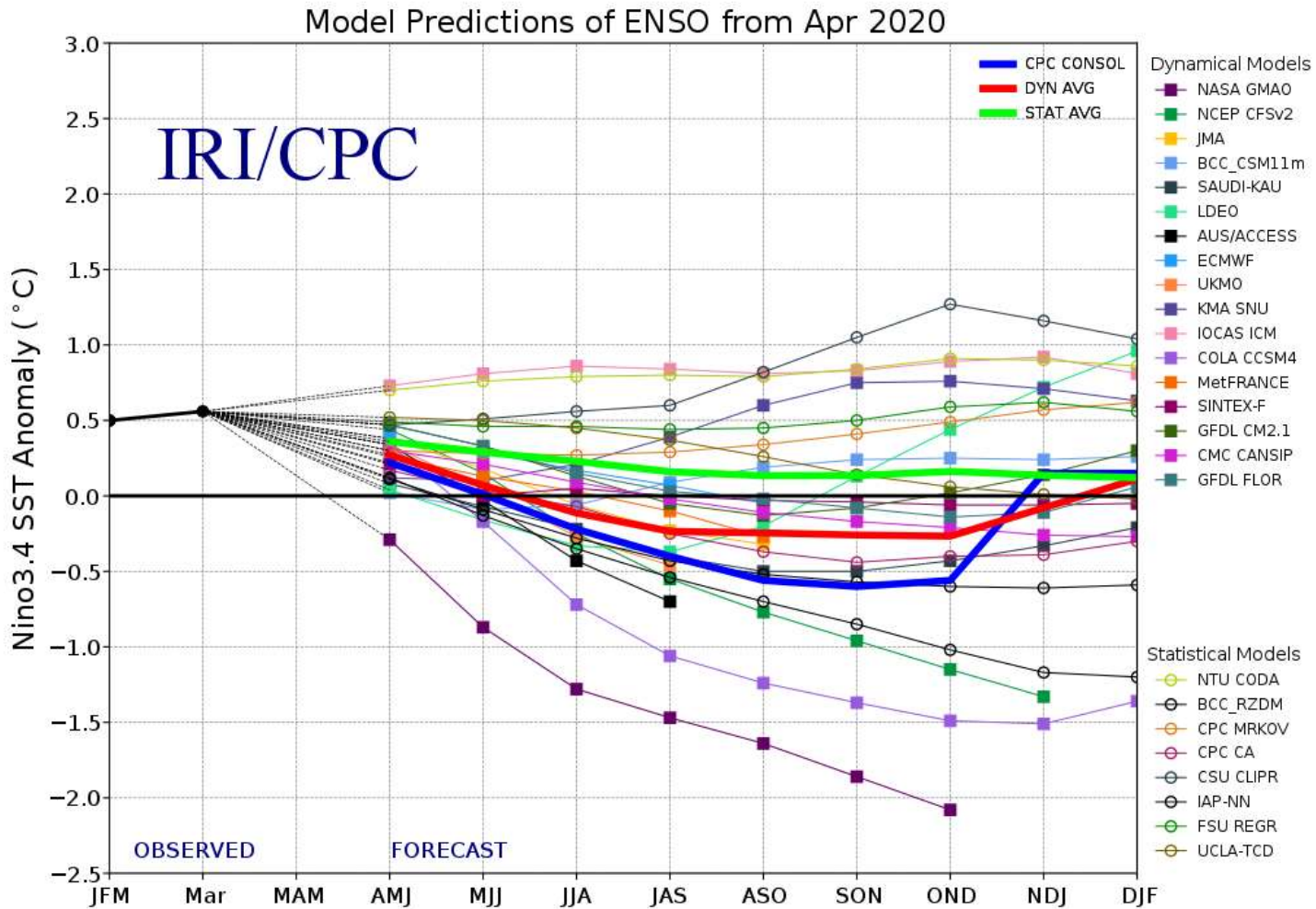


SST anomaly: $-0.4\text{ }^{\circ}\text{C}$

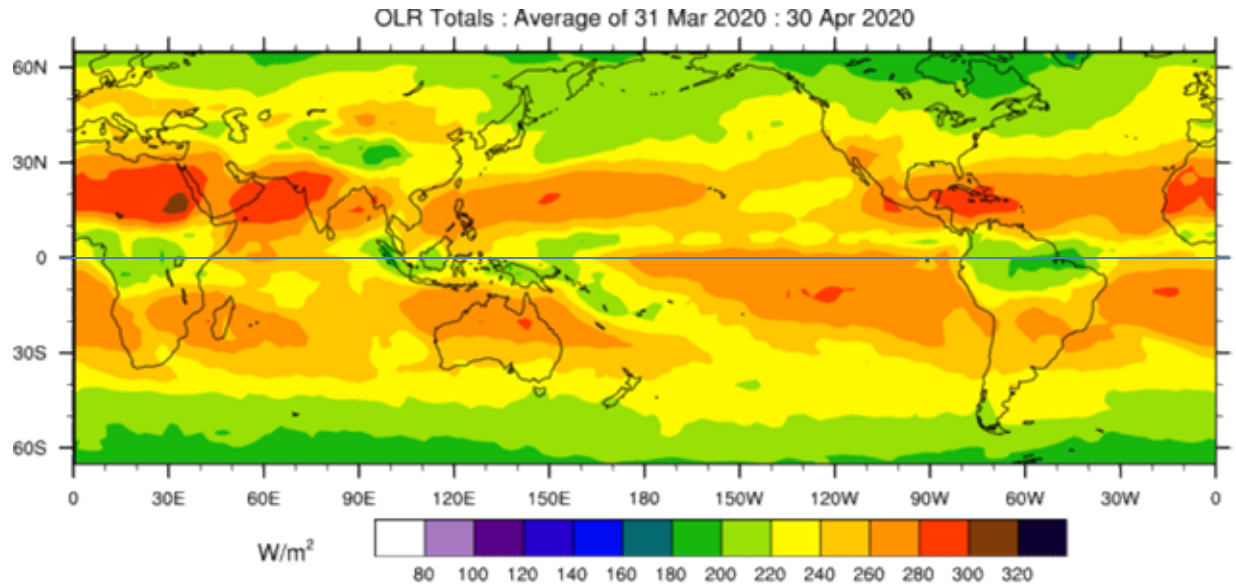


SST anomaly: $-0.7\text{ }^{\circ}\text{C}$

Climate Model Summary



Outgoing Longwave Radiation (OLR)



30 Days

