

ENSO update - OCOF 159

16 December 2020

ENSO Update

Climate Driver Update

Climate drivers in the [Pacific](#), [Indian](#) and [Southern](#) oceans and the [Tropics](#)

🕒 Issued **8 December 2020** Next issue **22 December 2020**

Overview

Pacific Ocean

Indian Ocean

Southern Ocean

Tropics

Summary

Sea surface

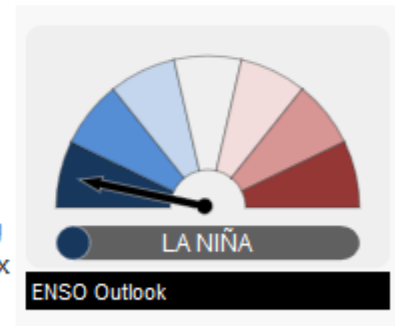
La Niña continues, likely to peak during southern summer

La Niña continues in the tropical Pacific.

Oceanic and atmospheric indicators reflect a mature La Niña with little variation over last fortnight. Model outlooks suggest the event will peak at moderate levels during December, returning to a neutral phase during the late summer or autumn.

The Southern Annular Mode (SAM) is expected to increase to strongly positive values over the coming week. This is driven in part by the La Niña influence, and in part by a stronger than average polar vortex over Antarctica. Positive values are expected at least into early 2021, and typically increase the chance of rainfall in eastern Australia.

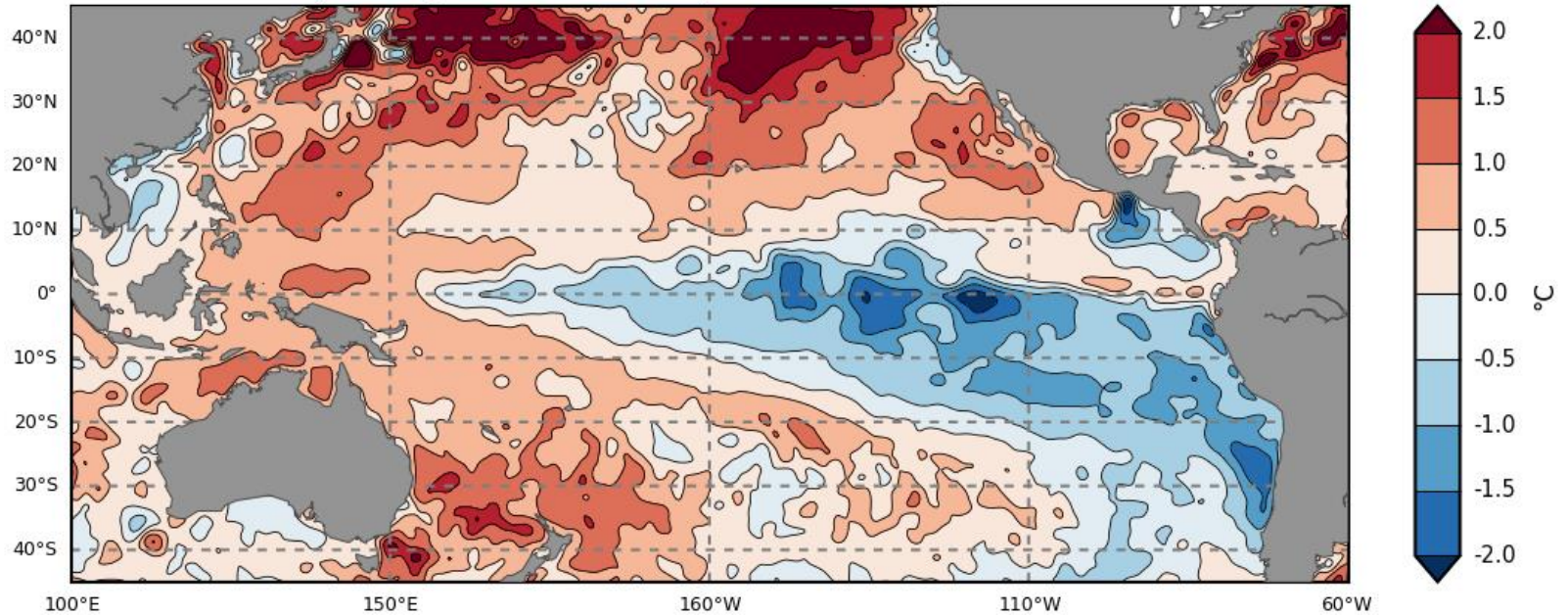
The Madden–Julian Oscillation (MJO) is relatively weak, and is currently over the Maritime Continent (Indonesia). It is forecast to move east and across Australian longitudes over the next fortnight. The MJO, in conjunction with other tropical influences, is looking favourable for monsoon onset and producing above-average rainfall over northern Australia.



November 2020 SSTs

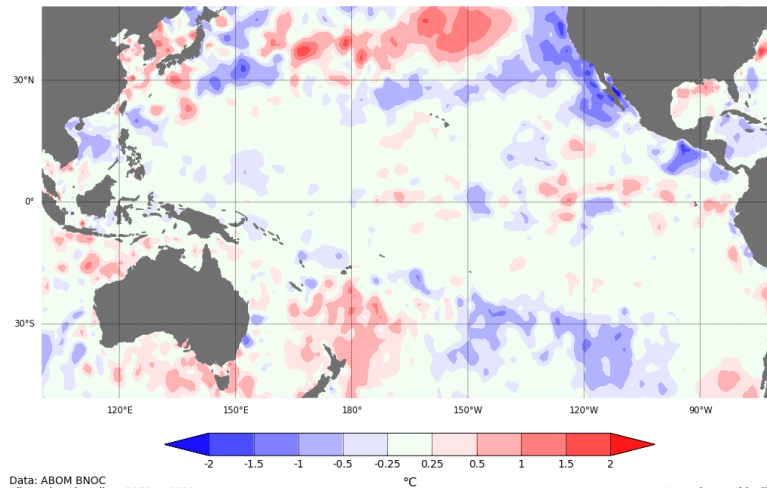
Pacific Ocean

Monthly Average Sea Surface Temperature Anomaly: November 2020



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

Change in the monthly SST anomaly: November-2020 - October-2020

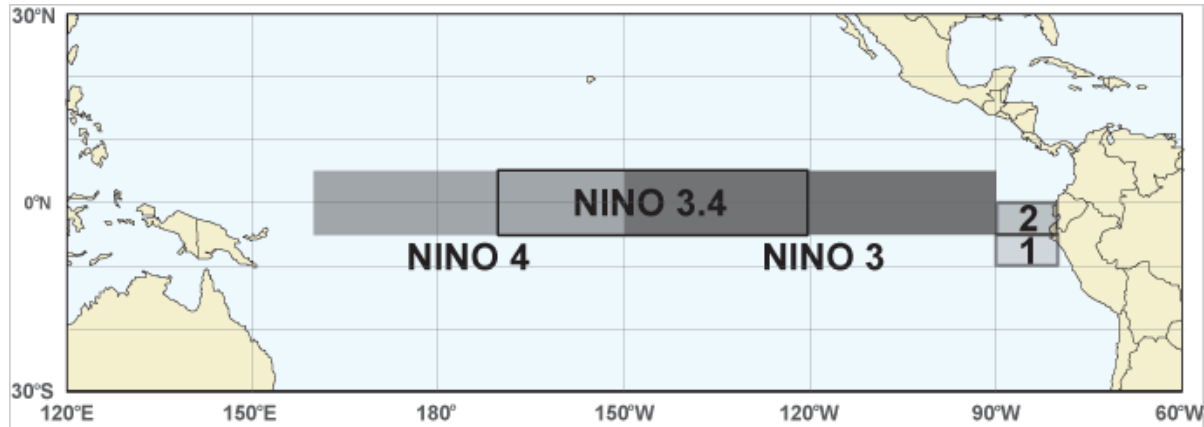


Data: ABOM BNOG
Climatology baseline: 1961 to 1990
© Commonwealth of Australia 2020, Australian Bureau of Meteorology

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

Anomaly monthly difference
Created: 07/12/2020

NINO SST anomalies (°C)

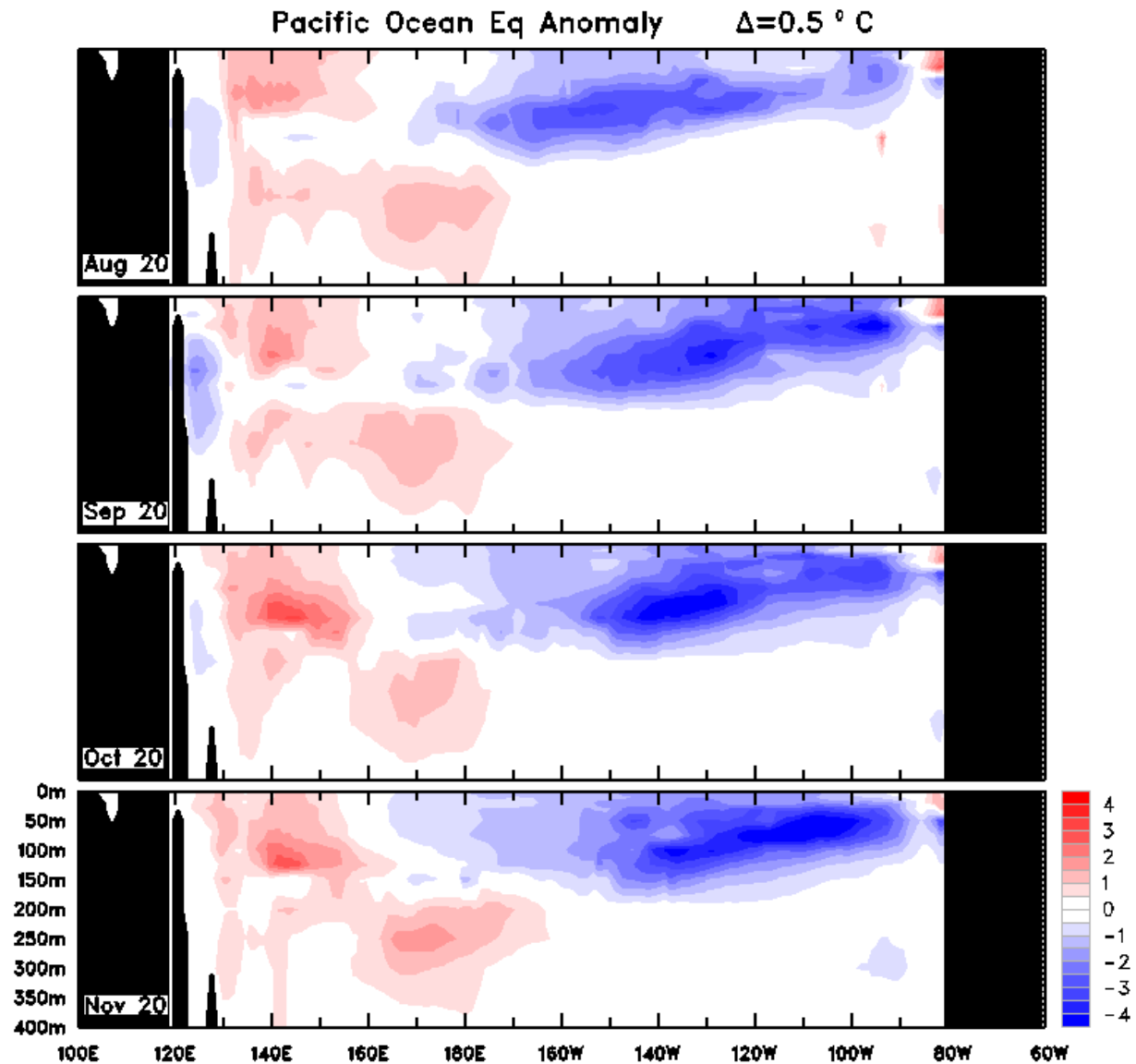


Index	Oct 2020	Nov 2020	Latest weekly
NINO3	-0.8	-0.8	-0.6
NINO3.4	-1.0	-1.0	-0.8
NINO4	-0.5	-0.4	-0.5

Weekly data for the week ending 13/12/2020

Equatorial Pacific sub-surface profile

Bureau of Meteorology



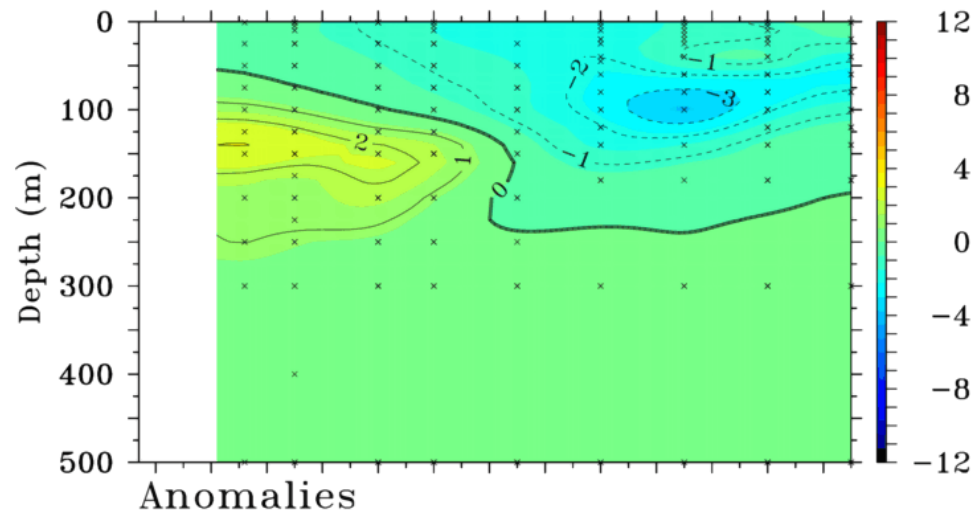
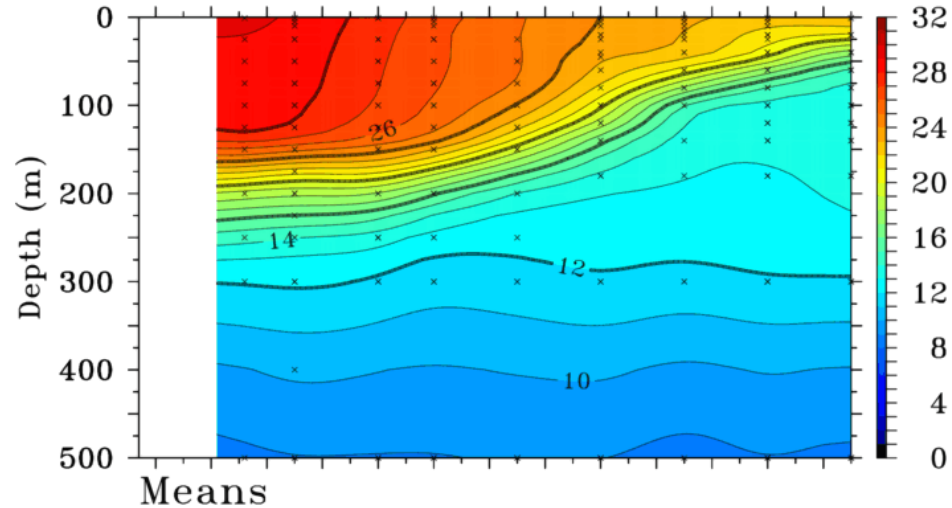
Analysis done Nov 30 22:25

Equatorial Pacific sub-surface profile

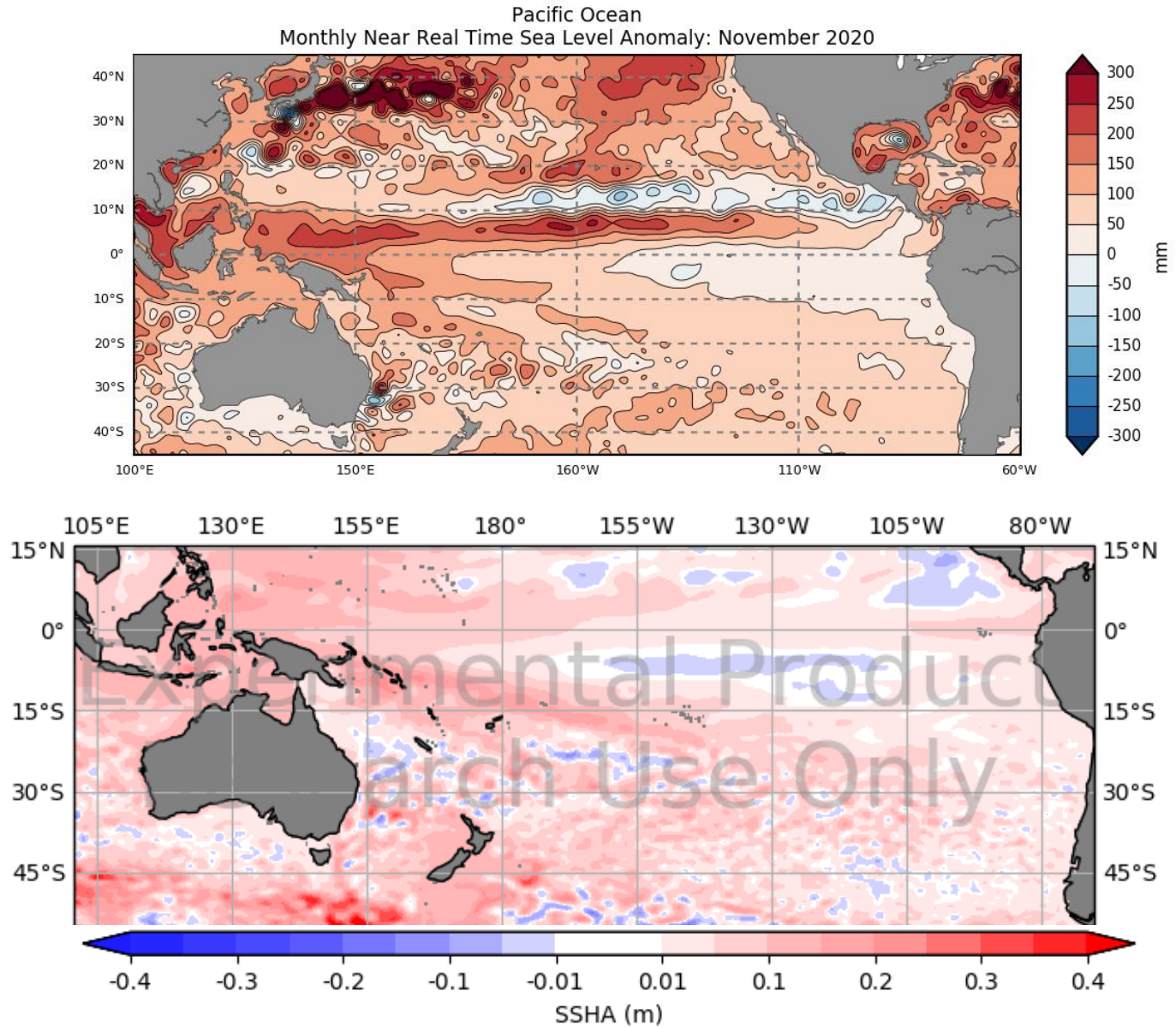
TAO/TRITON 5-Day Temperature ($^{\circ}\text{C}$)

End Date: December 12 2020 2°S to 2°N Average

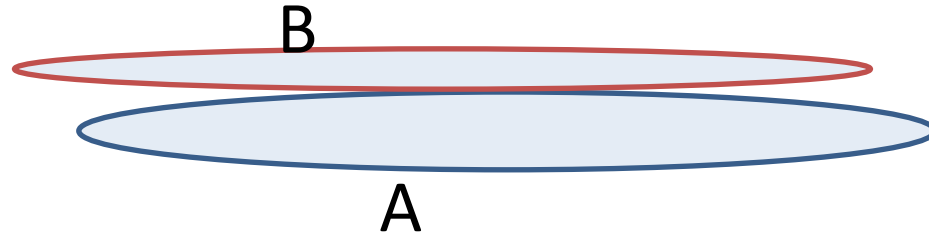
140°E 160°E 180° 160°W 140°W 120°W 100°W



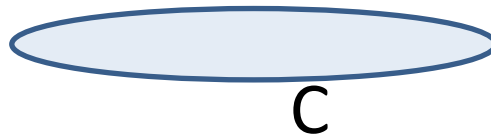
November 2020 Sea Level Anomaly



Ocean Currents at ? 2020

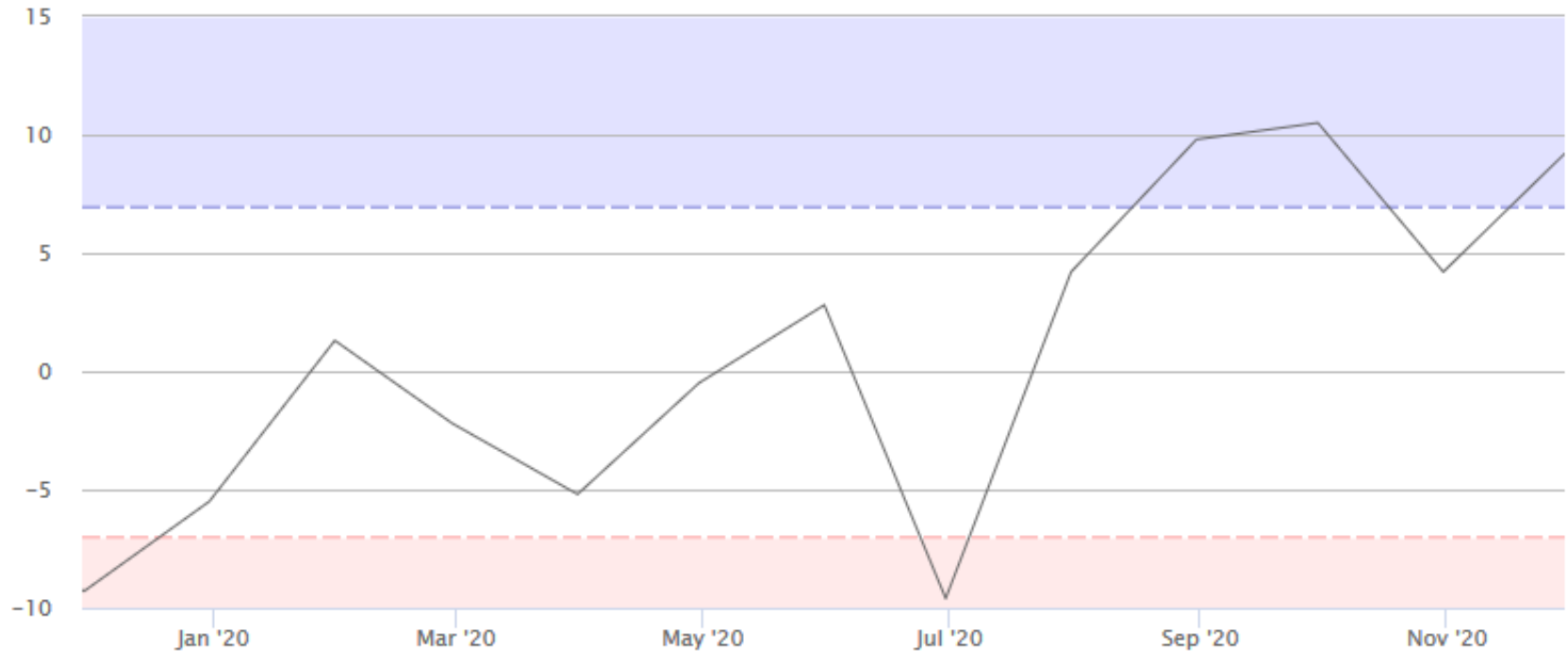


Not available



Southern Oscillation Index

Southern Oscillation Index – monthly

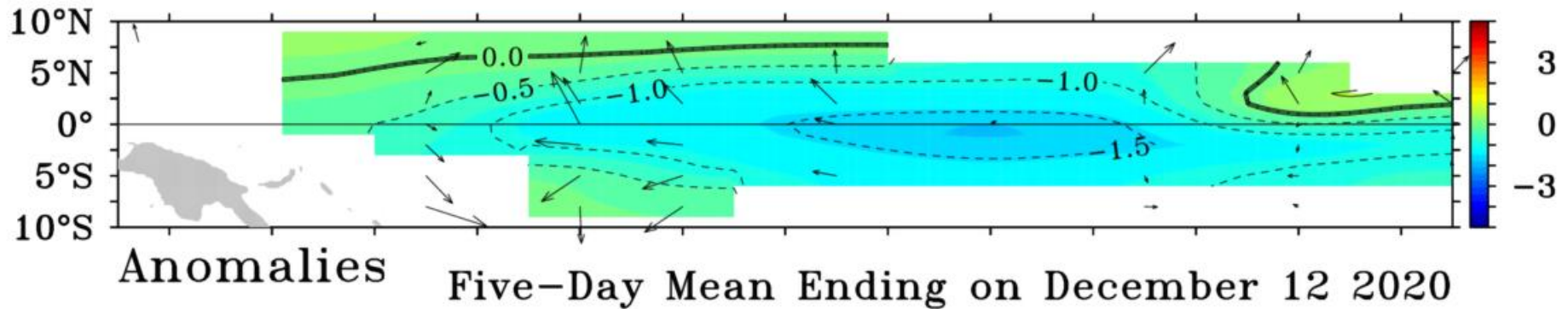
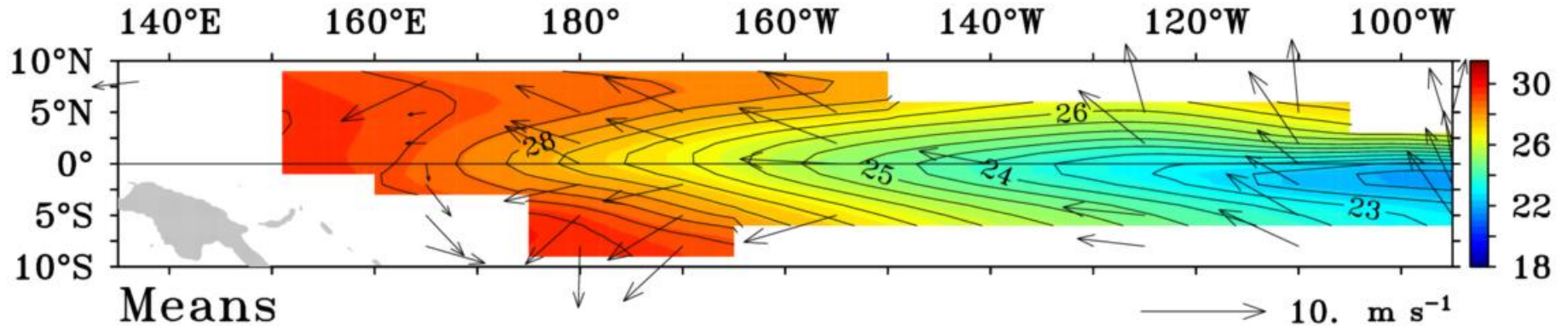


Southern Oscillation Index monthly data												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	+1.3	-2.2	-5.2	-0.5	+2.8	-9.6	+4.2	+9.8	+10.5	+4.2	+9.2	-
2019	-0.6	-13.5	-6.8	-1.3	-9.0	-10.4	-5.6	-4.4	-12.4	-5.6	-9.3	-5.5

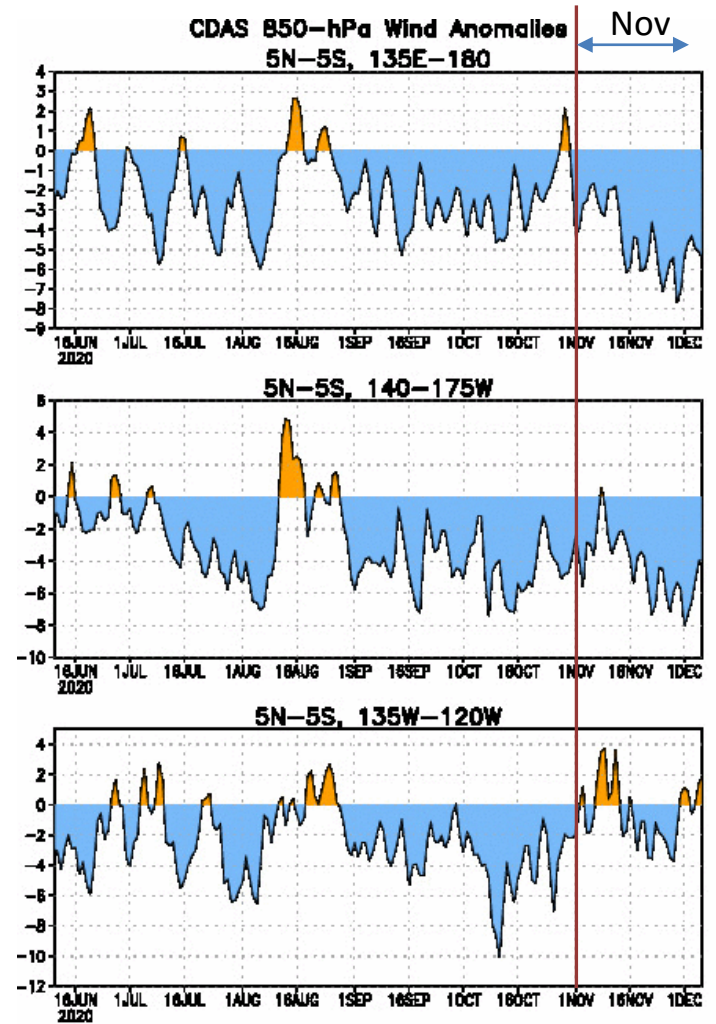
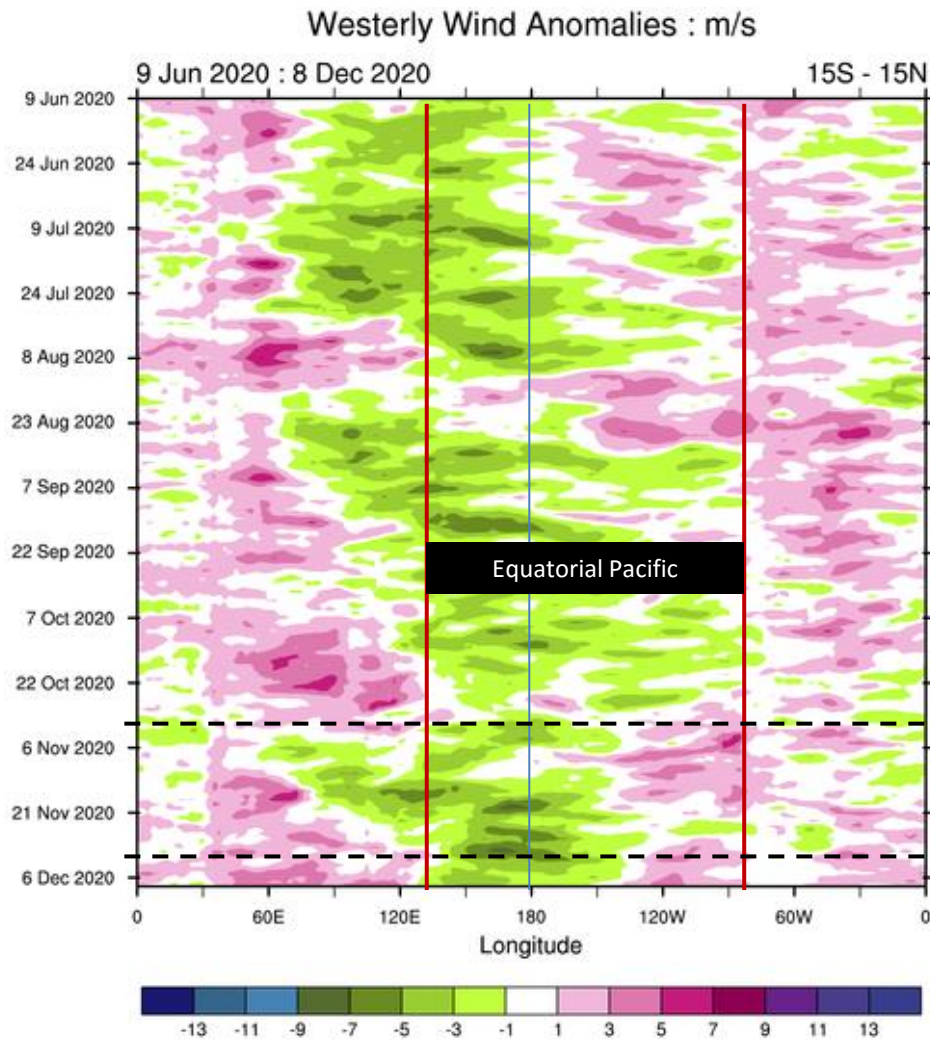
At 13 December 2020: 30-day SOI = +11; 90-day SOI = +9

Equatorial Trade Winds

TAO/TRITON SST ($^{\circ}\text{C}$) and Winds (m s^{-1})



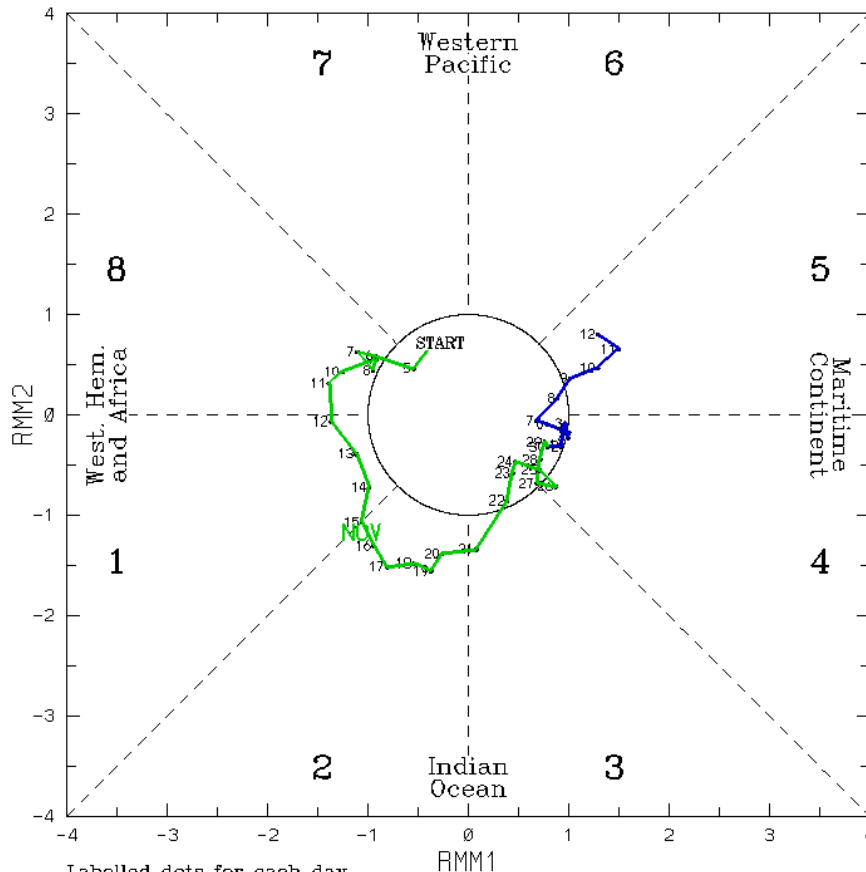
Equatorial Trade Winds



Data updated through 06 DEC 2020
CLIMATE PREDICTION CENTER/NCEP

Madden-Julian Oscillation

(RMM1, RMM2) phase space for 3-Nov-2020 to 12-Dec-2020

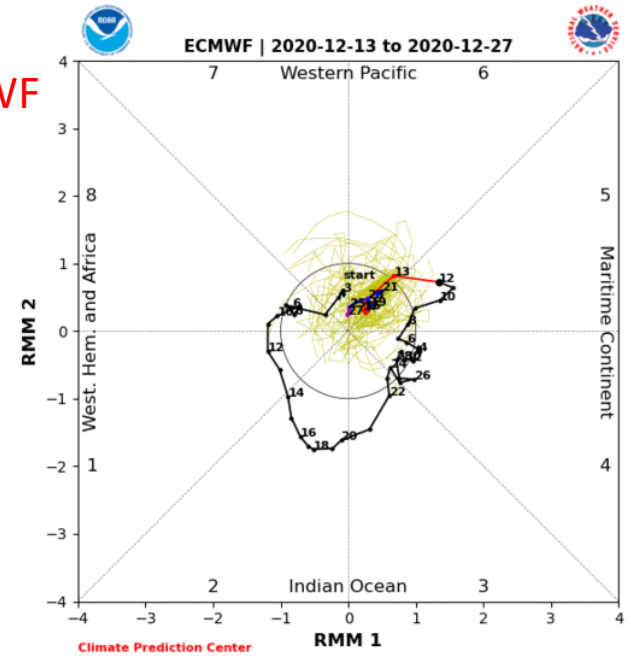


Labeled dots for each day.

Blue line is for Dec, green line is for Nov, red line is for Oct.

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2020

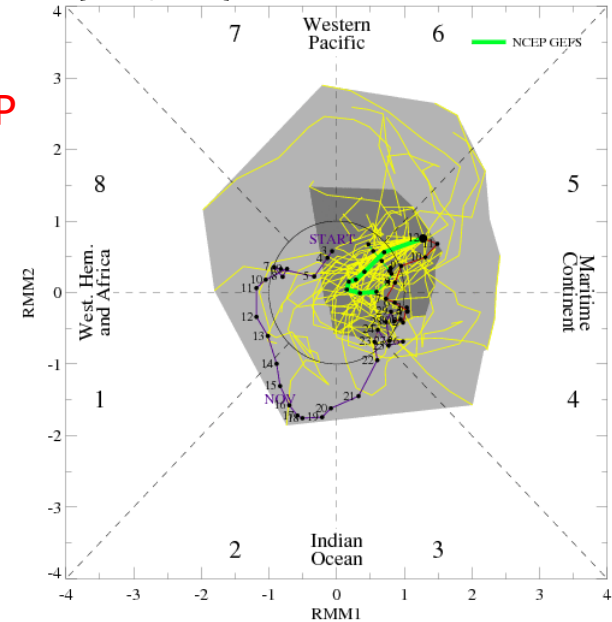
ECMWF



Climate Prediction Center

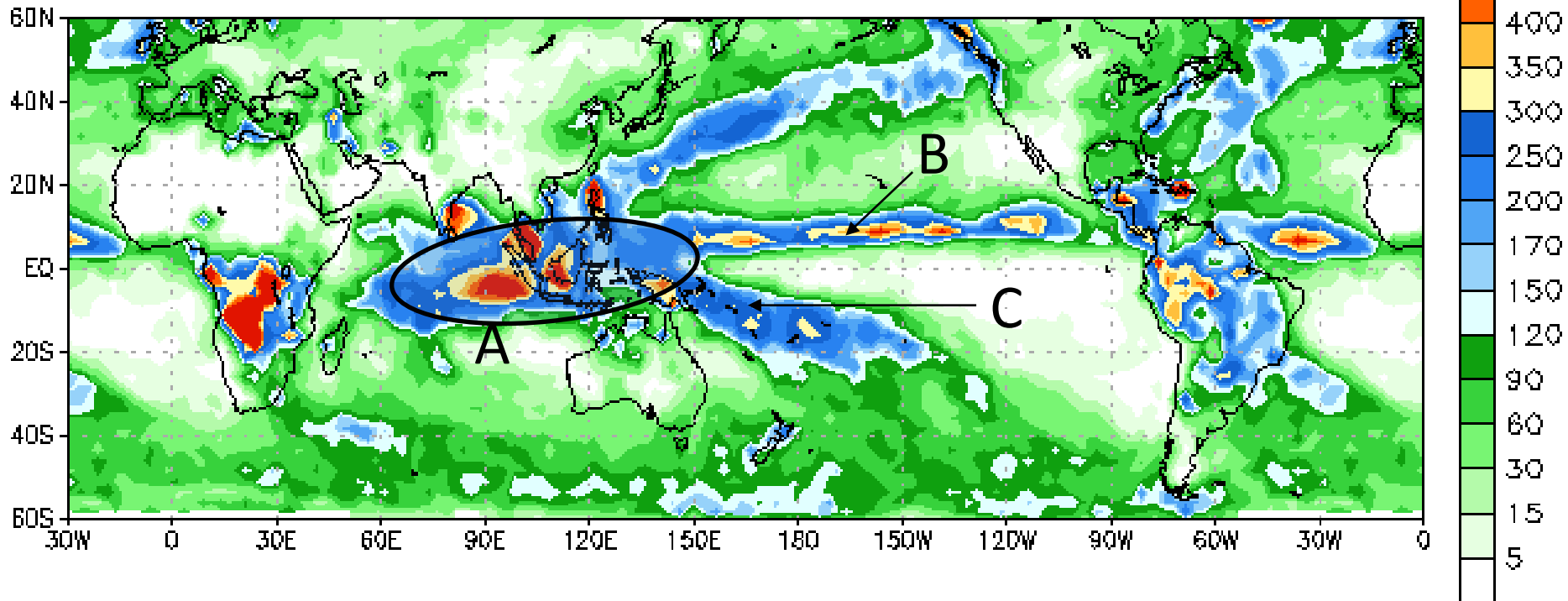
[RMM1, RMM2] forecast for Dec-13-2020 to Dec-27-2020

NCEP



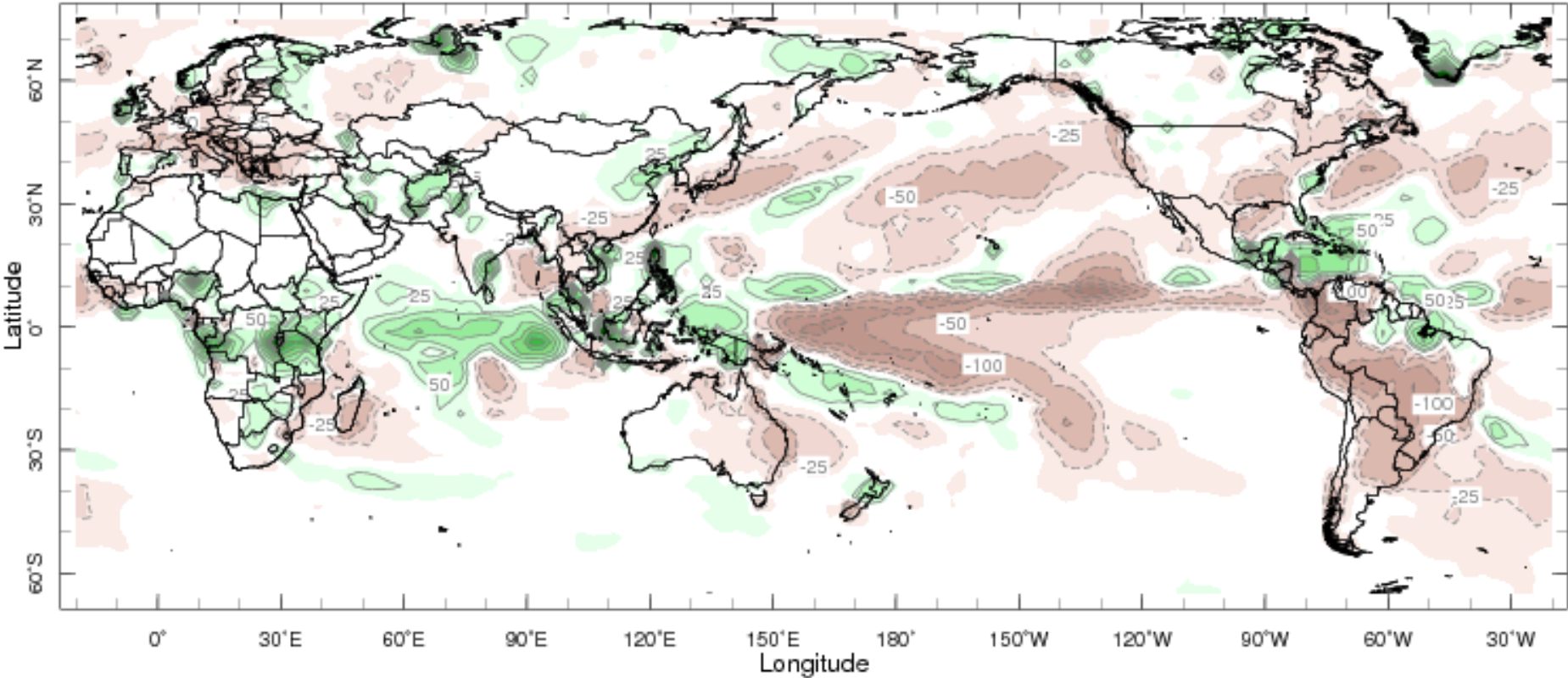
Satellite Rainfall November 2020

Accumulated Prep (mm) 04NOV2020 – 04DEC2020



Data Source: NCEP CMAP Precipitation

Satellite Rainfall Anomaly November 2020

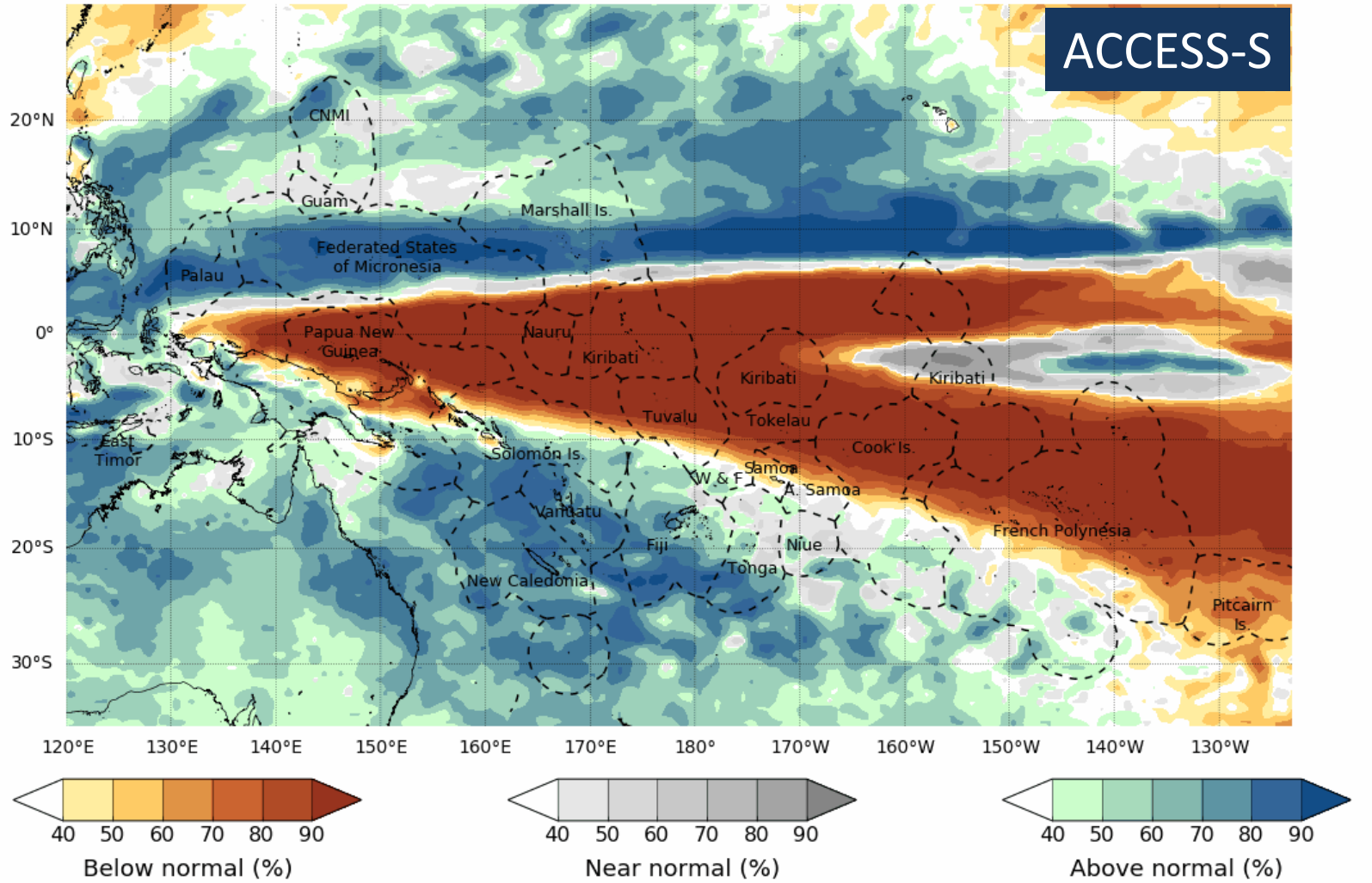


Nov 2020

Units = mm per month

Model Rainfall Predictions (DJF)

Tercile rainfall probabilities for
December 2020 to February 2021



Model: ACCESS-S1
Base period: 1990-2012
Model run: 30/11/2020
Issued: 03/12/2020

Model Rainfall Predictions (DJF)

C3S multi-system seasonal forecast

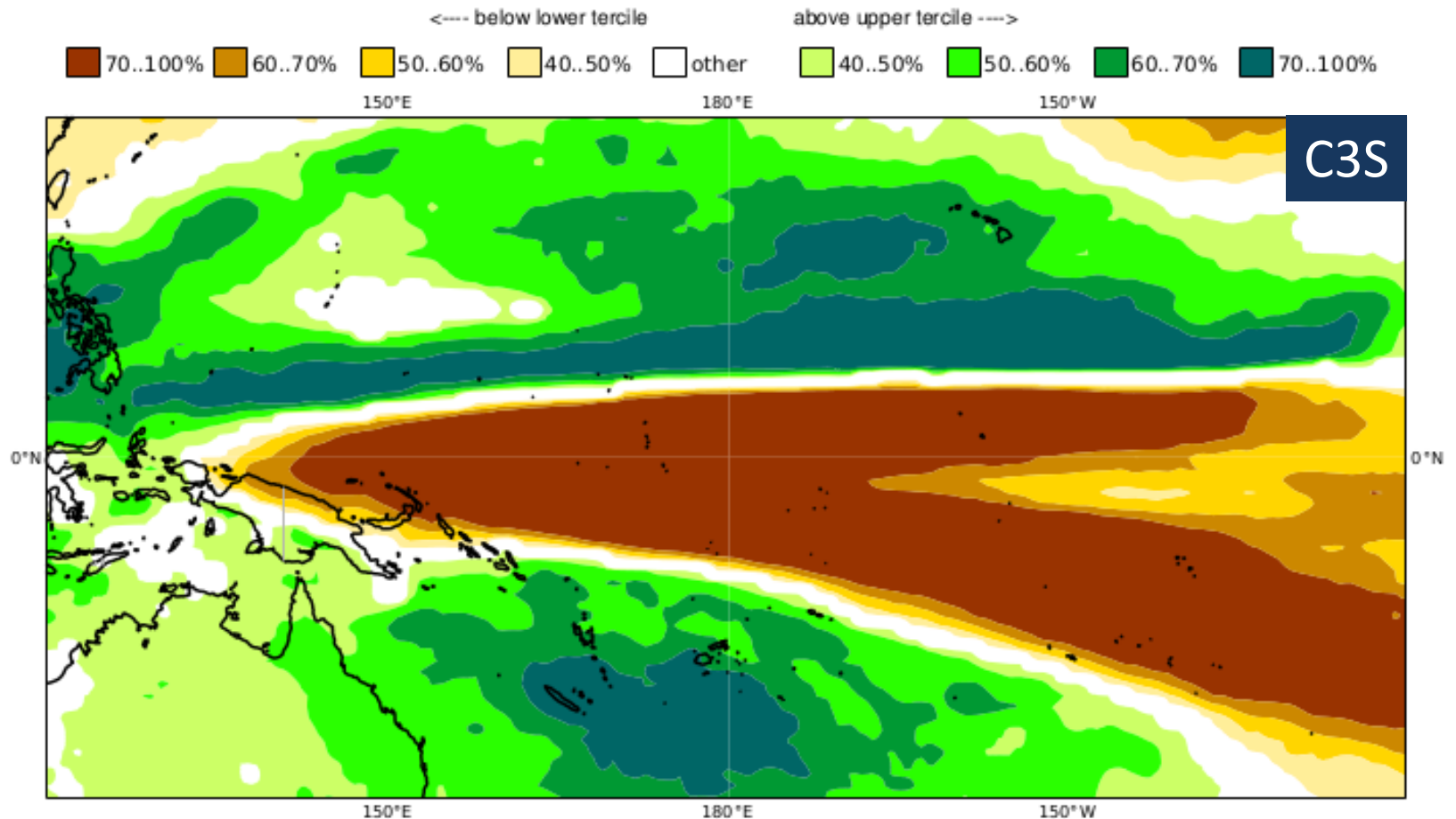
ECMWF/Met Office/Météo-France/CMCC/DWD/NCEP/JMA

Prob(most likely category of precipitation)

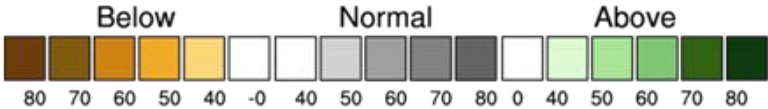
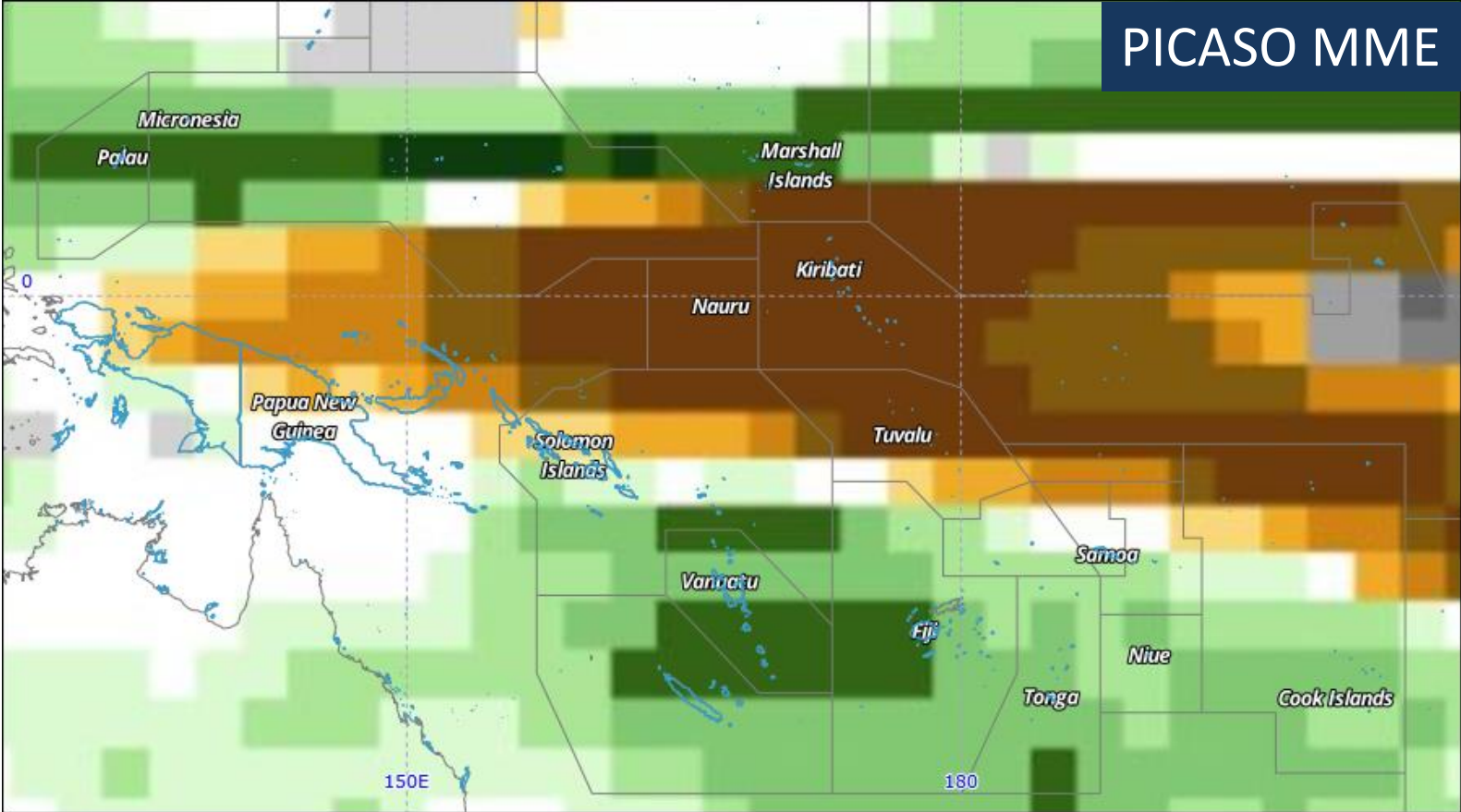
DJF 2020/21

Nominal forecast start: 01/11/20

Unweighted mean



Model Rainfall Predictions (DJF)



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

Model: APCC, MSC, NASA, NCEP, PNU, POAMA

Generated using CLIK® (2020-12-10)

© APEC Climate Center

Model Rainfall Predictions (DJF)

	Dec 2020-Feb 2021		
	ACCESS-S	C3S	PICASO
Cook Is North	Dark Red	Dark Red	Dark Red
Cook Is South	Light Green	Light Green	Light Green
Fiji West	Dark Blue	Dark Blue	Dark Blue
Fiji Central	Light Green	Light Green	Light Green
Fiji East	Light Green	Dark Blue	Light Green
Fiji North	Light Green	Light Green	Light Green
Fiji Rotuma	Light Green	Light Green	Light Green
Kiribati West	Dark Red	Dark Red	Dark Red
Kiribati Central	Dark Red	Dark Red	Dark Red
Kiribati East	Dark Red	Dark Red	Dark Red
Marshall Is	Dark Blue	Dark Blue	Dark Blue
Niue	Light Green	Light Green	Light Green
Palau	Dark Blue	Dark Blue	Dark Blue
PNG Momase	Yellow	Yellow	Yellow
PNG Is	Dark Red	Dark Red	Dark Red
PNG South	Light Green	Light Green	Light Green
PNG Highlands	Light Green	Light Green	Light Green
Samoa	Yellow	Light Green	Light Green
Solomon Is West	Yellow	Yellow	Yellow
Solomon Is Central	Light Green	Light Green	Light Green
Solomon Is East	Light Green	Light Green	Light Green
Tonga North	Light Green	Light Green	Light Green
Tonga Central	Light Green	Light Green	Light Green
Tonga South	Light Green	Light Green	Light Green
Tuvalu North	Dark Red	Dark Red	Dark Red
Tuvalu Central	Dark Red	Dark Red	Dark Red
Tuvalu South	Yellow	Light Green	Yellow
Vanuatu North	Dark Blue	Dark Blue	Dark Blue
Vanuatu South	Dark Blue	Dark Blue	Dark Blue

	41-50%	51-60%	61-70%	71-80%	81-90%	>90%
Below normal	Yellow	Orange	Dark Orange	Red-Orange	Dark Red	Dark Red
Near-normal	Light Grey	Light Grey	Light Grey	Light Grey	Light Grey	Light Grey
Above normal	Light Green	Light Green	Light Green	Dark Green	Dark Blue	Dark Blue

Note the extra Tuvalu Central Division

Climate Model Summary for January to May 2021

Issued 14 December 2020 Next issue 12 January 2021

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

Overview

Pacific Ocean

Indian Ocean

Bureau model

Models

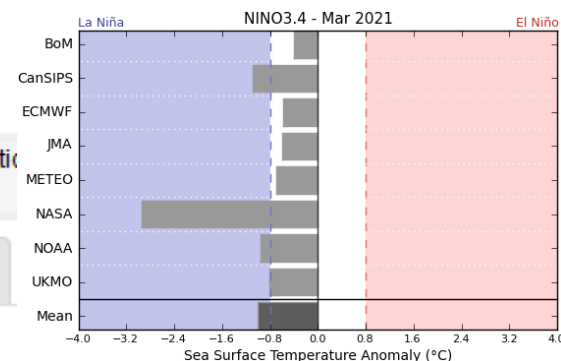
Related information

La Niña likely to be nearing peak

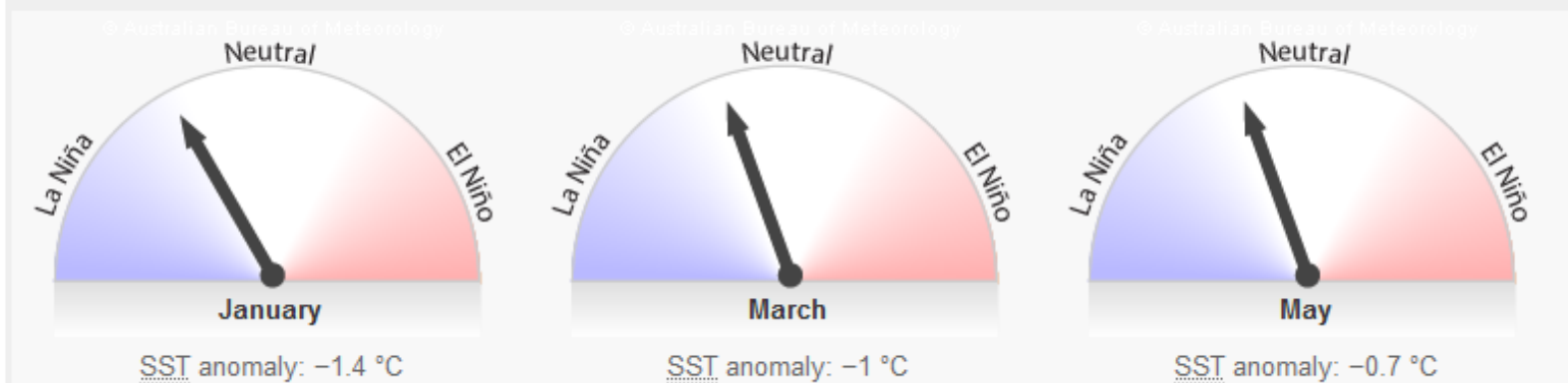
La Niña continues in the tropical Pacific Ocean. Surface and sub-surface temperatures in the tropical Pacific Ocean, pressure patterns, trade winds, and cloudiness are consistent with La Niña, although surface temperatures have remained steady or warmed slightly in recent weeks. All but one of the surveyed models indicate that it is likely that this La Niña is at, or nearing, its peak with a return to neutral conditions (neither El Niño nor La Niña) by the end of autumn. La Niña events typically enhance spring and summer rainfall in northern and eastern Australia.

The Indian Ocean Dipole (IOD) is neutral with models favouring a neutral outlook for the coming months. IOD events are typically unable to form between December and April. This is because the monsoon trough shifts south over the tropical Indian Ocean, changing wind patterns which prevents the IOD pattern from being able to influence the Australian region. The IOD therefore has little effect on Australian climate at this time of year.

Further details: [Climate Driver Update](#) | [Climate Outlooks](#)



Average of international model outlooks for NINO3.4



Climate Model Summary

