

ENSO update - OCOF 162

17 March 2021

ENSO Update

Climate Driver Update

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

🕒 Issued **16 March 2021** Next issue **30 March 2021**

Overview

Pacific Ocean

Indian Ocean

Southern Ocean

Tropics

Summary

Sea surface

La Niña nears its end

The 2020–21 La Niña is nearing its end, with most oceanic indicators of the El Niño–Southern Oscillation (ENSO) now at neutral levels. However, a number of atmospheric indicators remain at La Niña levels, meaning La Niña’s influence is likely to persist into April, with outlooks indicating a wetter than average month for northern and eastern parts of Australia.

Tropical Pacific Ocean sea surface temperatures have returned to ENSO-neutral values in the past fortnight. Below the surface, waters have also been warming. However, atmospheric indicators such as cloudiness near the Date Line and trade winds persist at La Niña levels. The Southern Oscillation Index (SOI) in recent days has dipped below La Niña thresholds, although this may just be a temporary easing.

These changes in indicators are consistent with climate model outlooks, which for several weeks have indicated a return to ENSO neutral during the southern hemisphere autumn. While around 40% of past La Niña events have re-strengthened for a second year, there are currently no models suggesting that La Niña will return during winter.

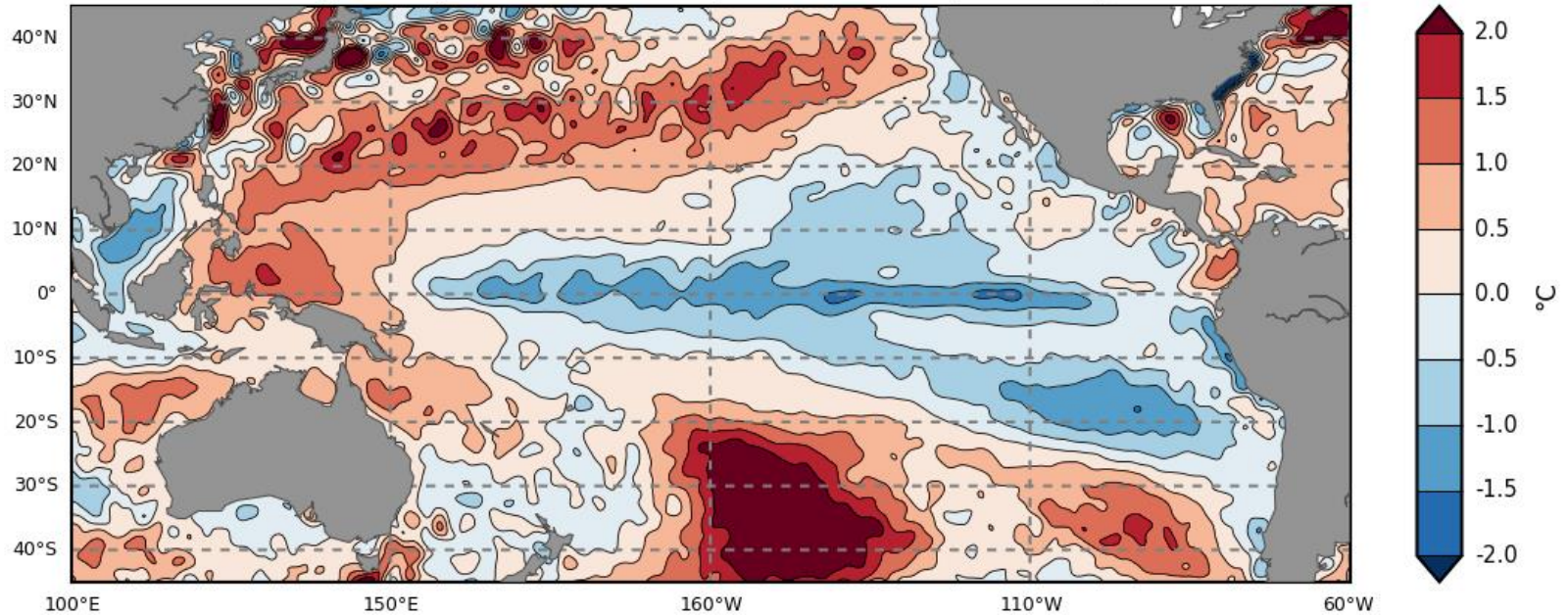
The Madden–Julian Oscillation (MJO) has recently reappeared in the African region at moderate strength but is forecast to weaken in the coming week. At this time of the year, an MJO pulse near Africa is often associated with below-average rainfall across northern Australia. However, if the MJO weakens as predicted its influence upon Australian rainfall in the coming weeks will be greatly reduced.



February 2021 SSTs

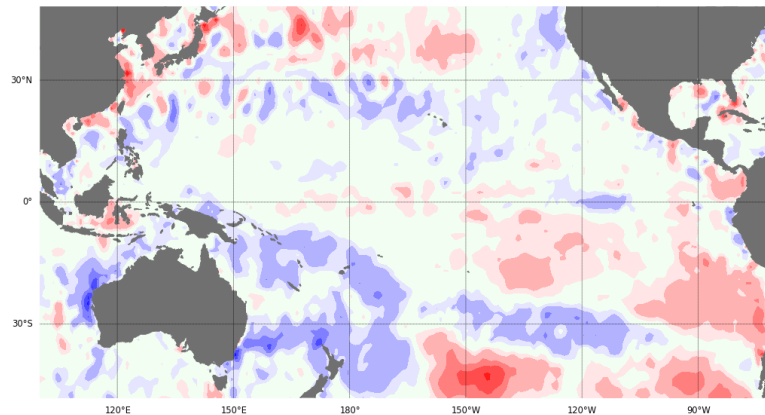
Pacific Ocean

Monthly Average Sea Surface Temperature Anomaly: February 2021



©Pacific Community (SPC) 2021
Geoscience Energy and Maritime Division, COSPPac SPP

Change in the monthly SST anomaly: February-2021 - January-2021

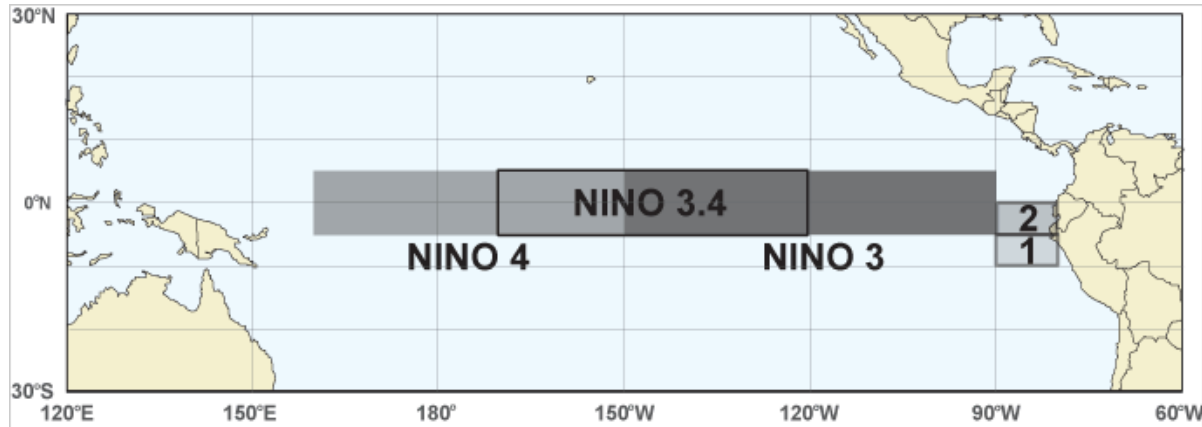


Data: ABOM BNOG
Climatology baseline: 1961 to 1990
© Commonwealth of Australia 2021, Australian Bureau of Meteorology

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

Anomaly monthly difference
Created: 08/03/2021

NINO INDICES SST anomalies (°C)

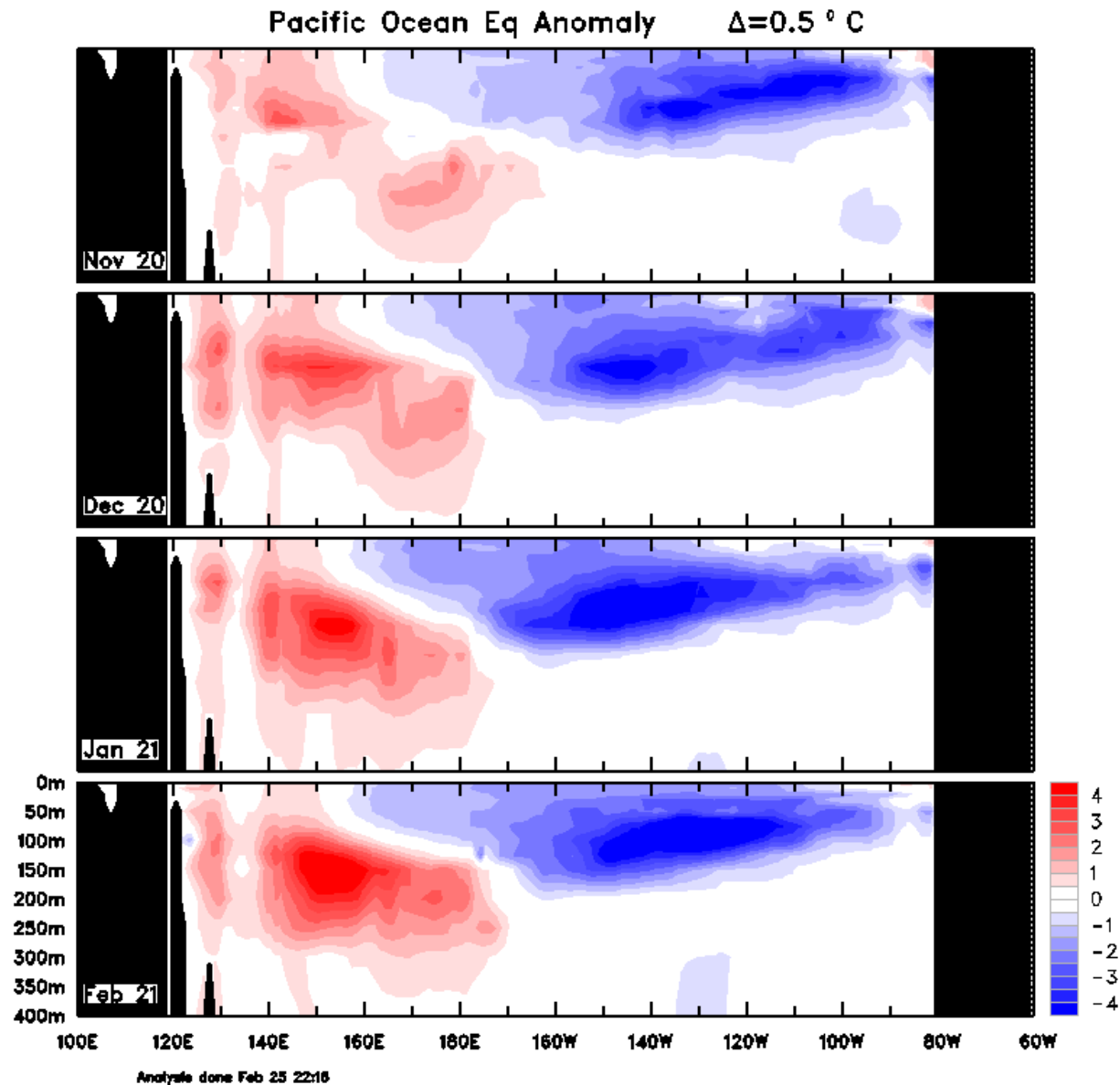


Index	Jan 2021	Feb 2021	Latest weekly
NINO3	-0.4	-0.4	-0.1
NINO3.4	-0.8	-0.7	-0.4
NINO4	-0.9	-0.8	-0.3

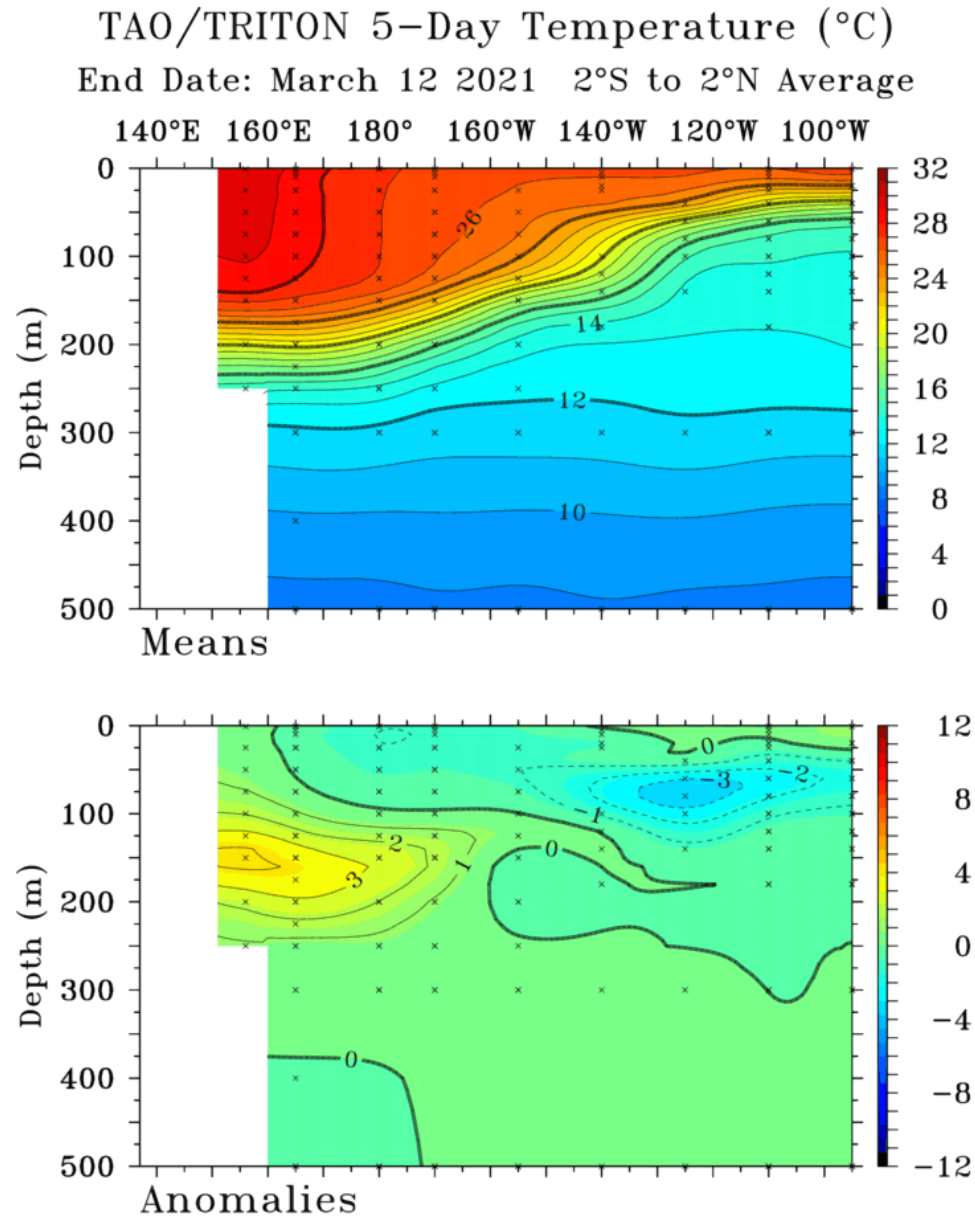
Weekly data for the week ending 14/03/2021

Equatorial Pacific sub-surface profile

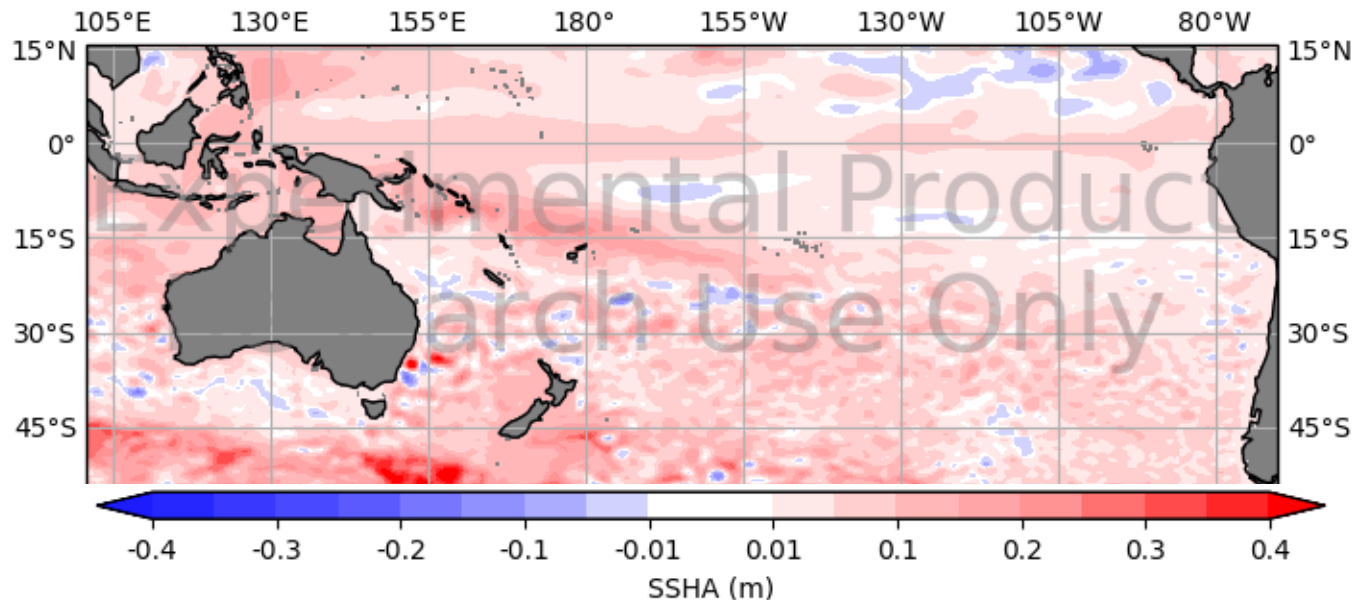
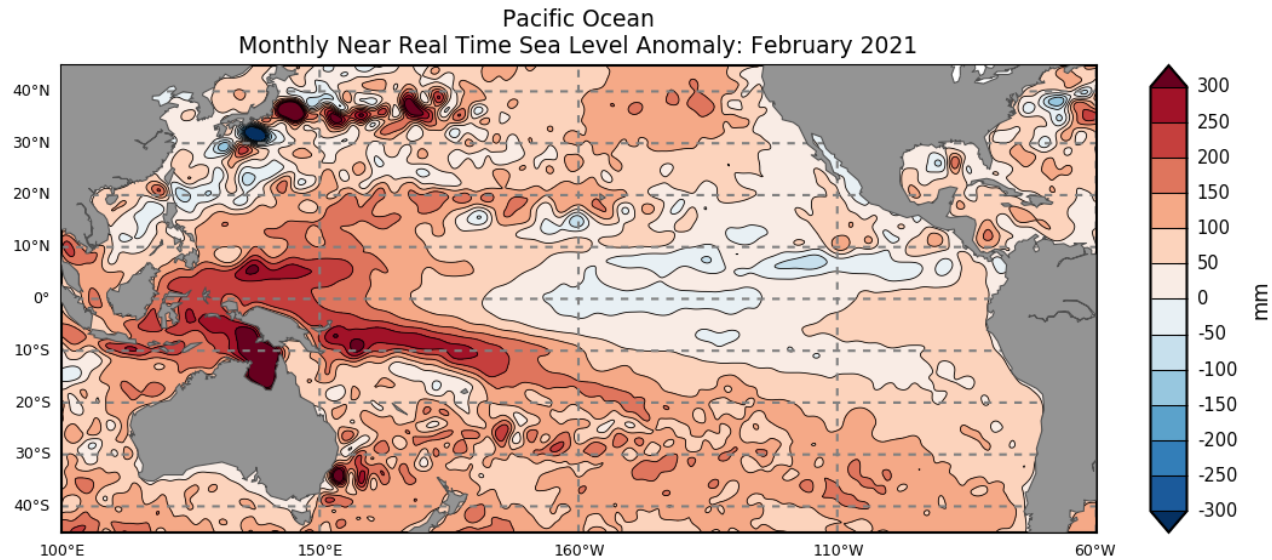
Bureau of Meteorology



Equatorial Pacific sub-surface profile

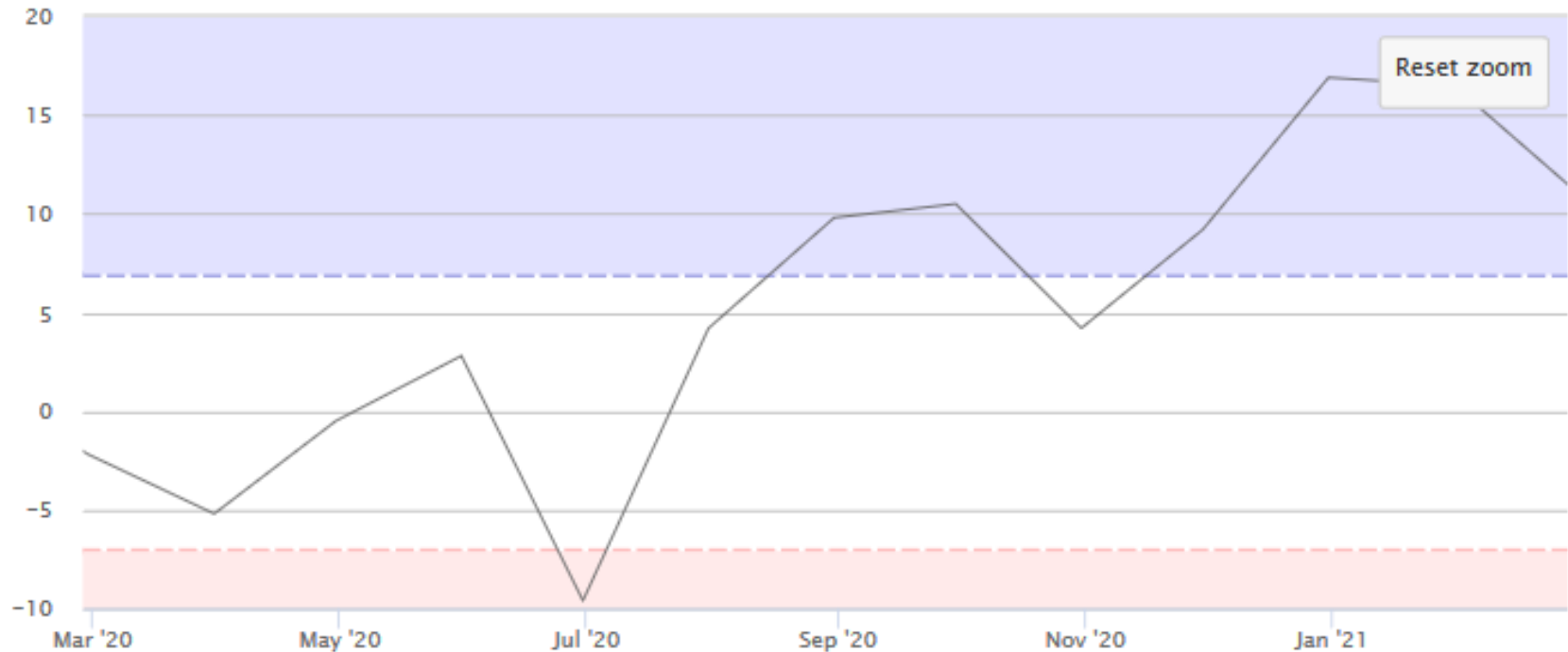


February 2021 Sea Level Anomaly



Southern Oscillation Index

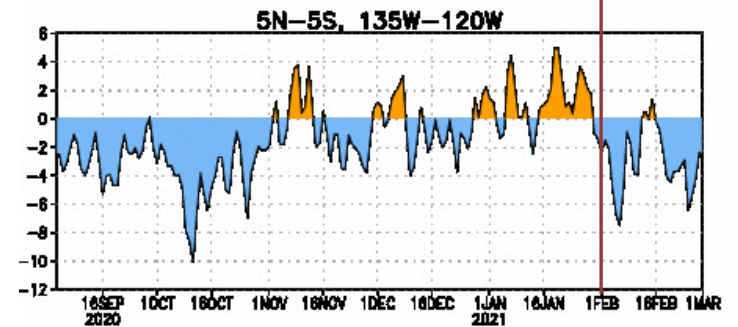
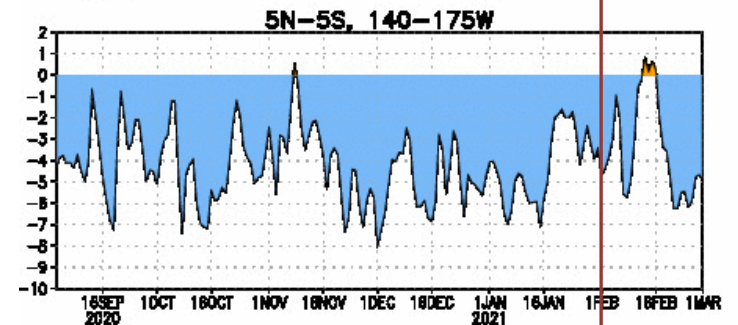
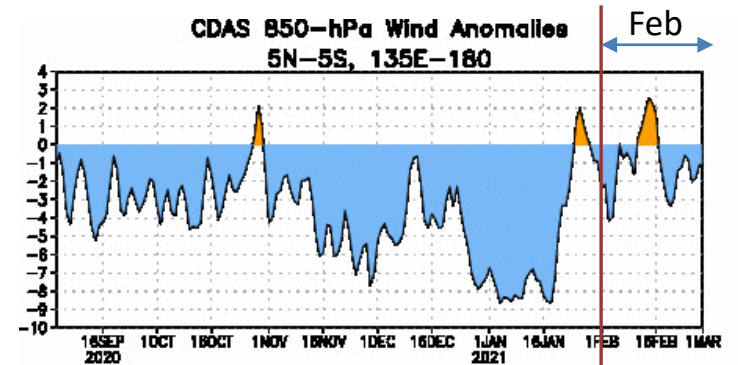
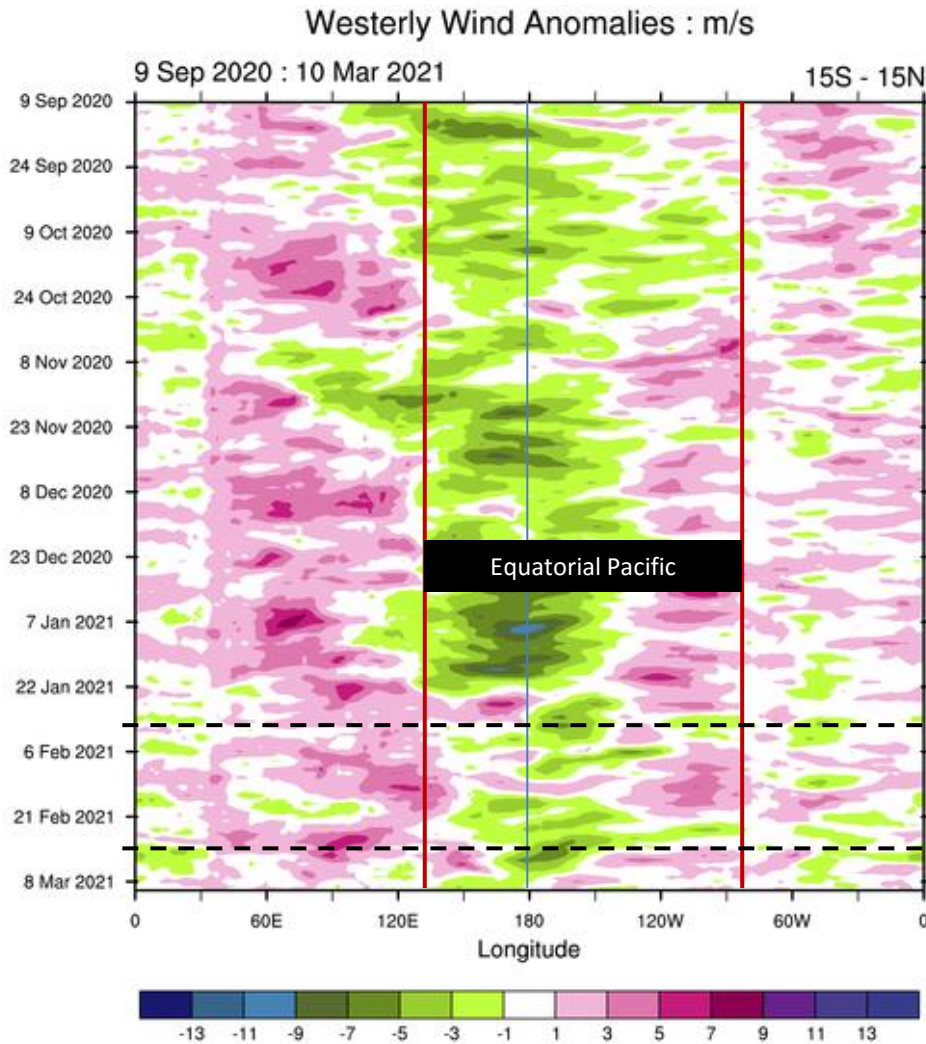
Southern Oscillation Index - monthly



Southern Oscillation Index monthly data												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2021	+16.5	+11.5	-	-	-	-	-	-	-	-	-	-
2020	+1.3	-2.2	-5.2	-0.5	+2.8	-9.6	+4.2	+9.8	+10.5	+4.2	+9.2	+16.9

At 14 March 2021: 30-day SOI = +4; 90-day SOI = +13

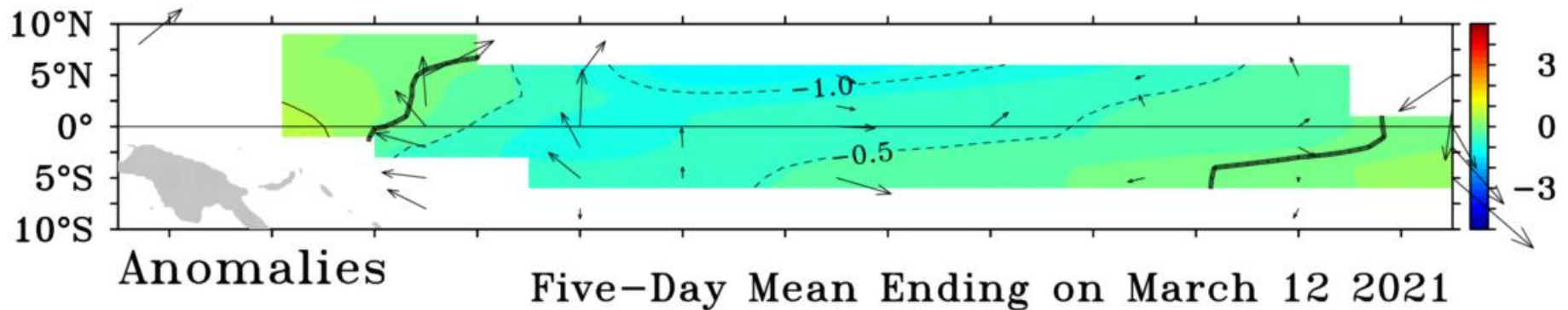
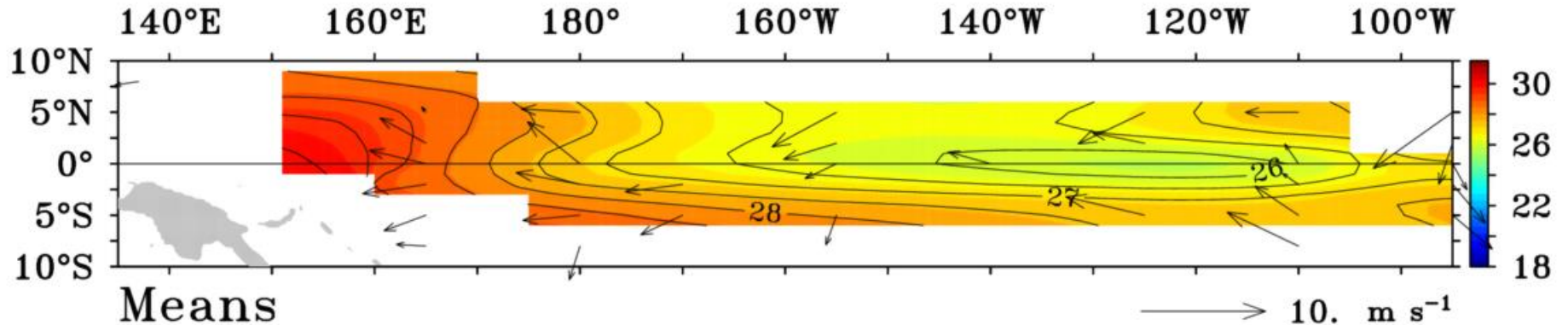
Equatorial Trade Winds



Data updated through 01 MAR 2021
CLIMATE PREDICTION CENTER/NCEP

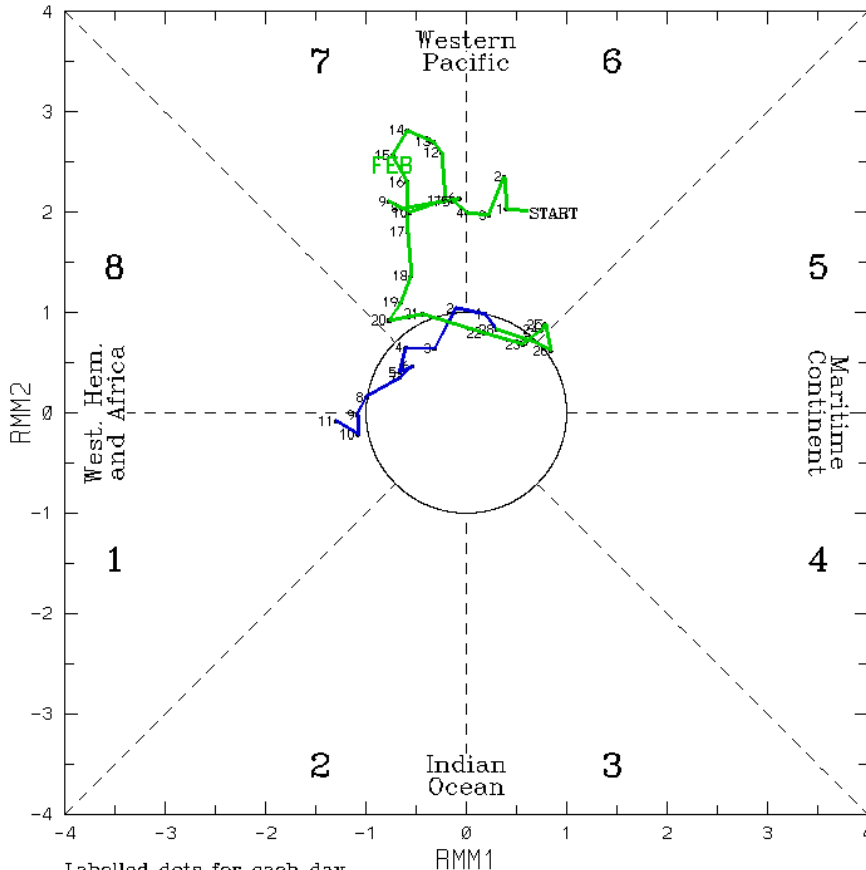
Equatorial Trade Winds

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



Madden-Julian Oscillation

(RMM1,RMM2) phase space for 31-Jan-2021 to 11-Mar-2021

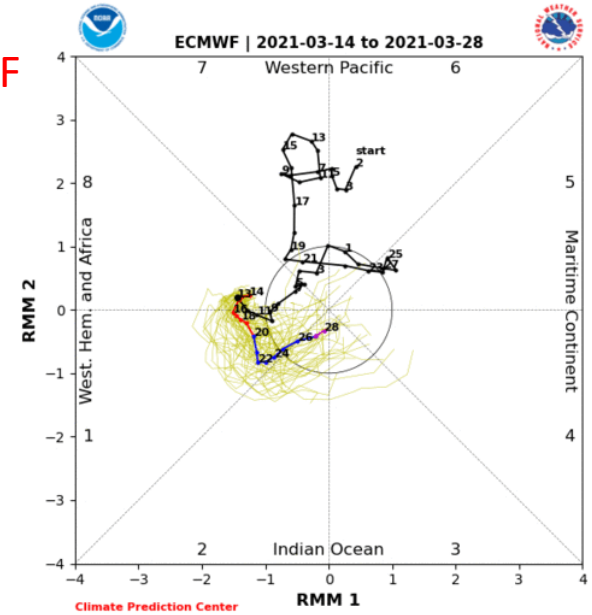


Labelled dots for each day.

Blue line is for Mar, green line is for Feb, red line is for Jan.

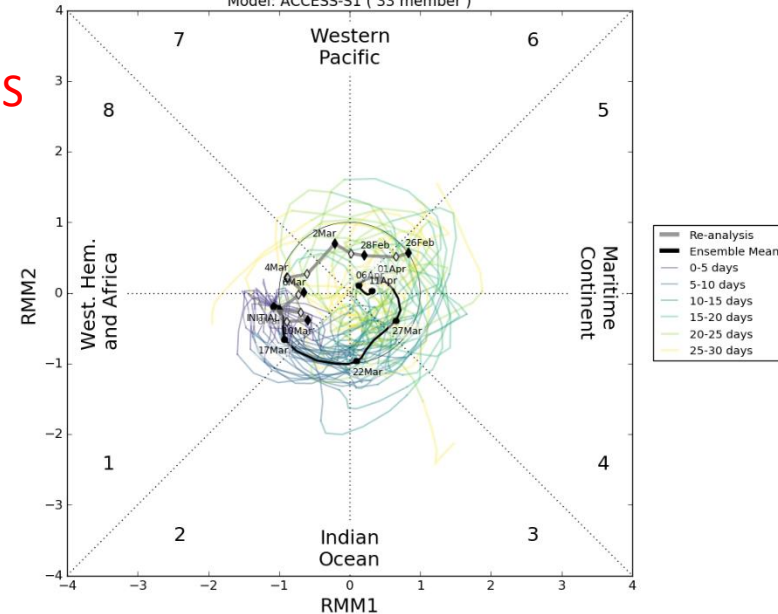
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2021

ECMWF



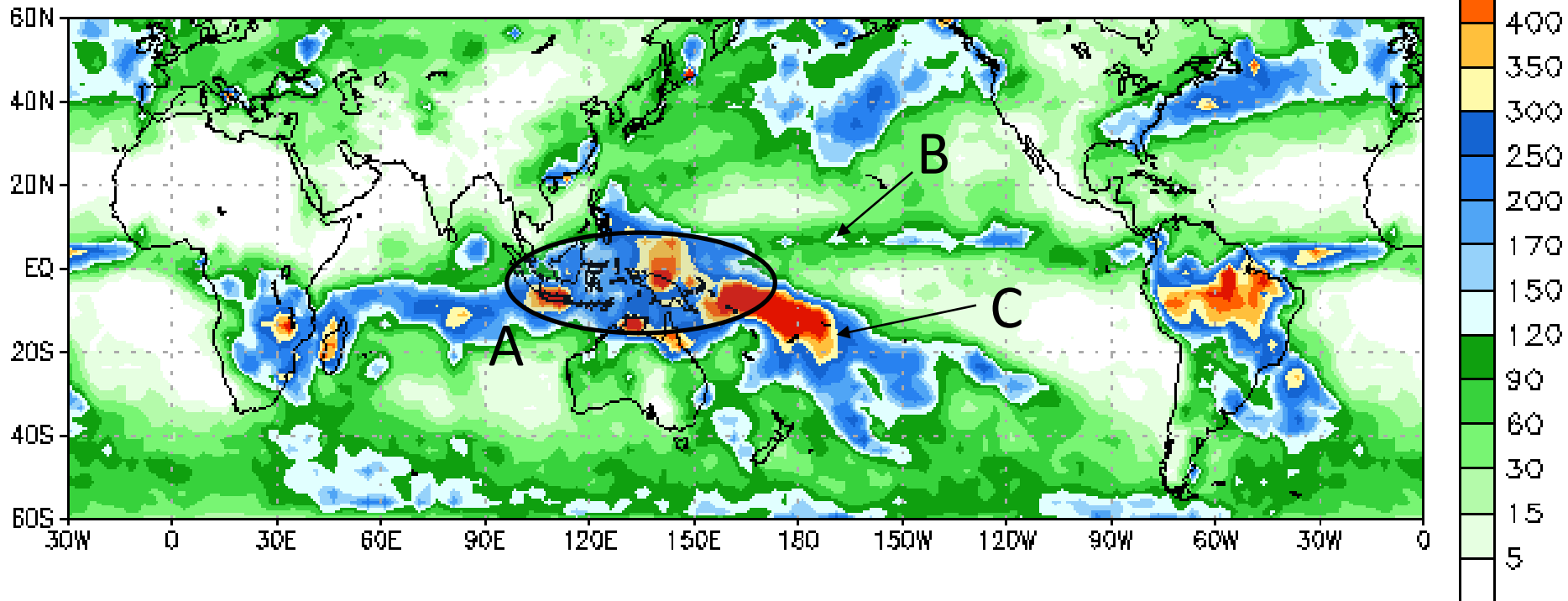
MJO Index Forecast initialised: 12 March 2021
Model: ACCESS-S1 (33 member)

ACCESS



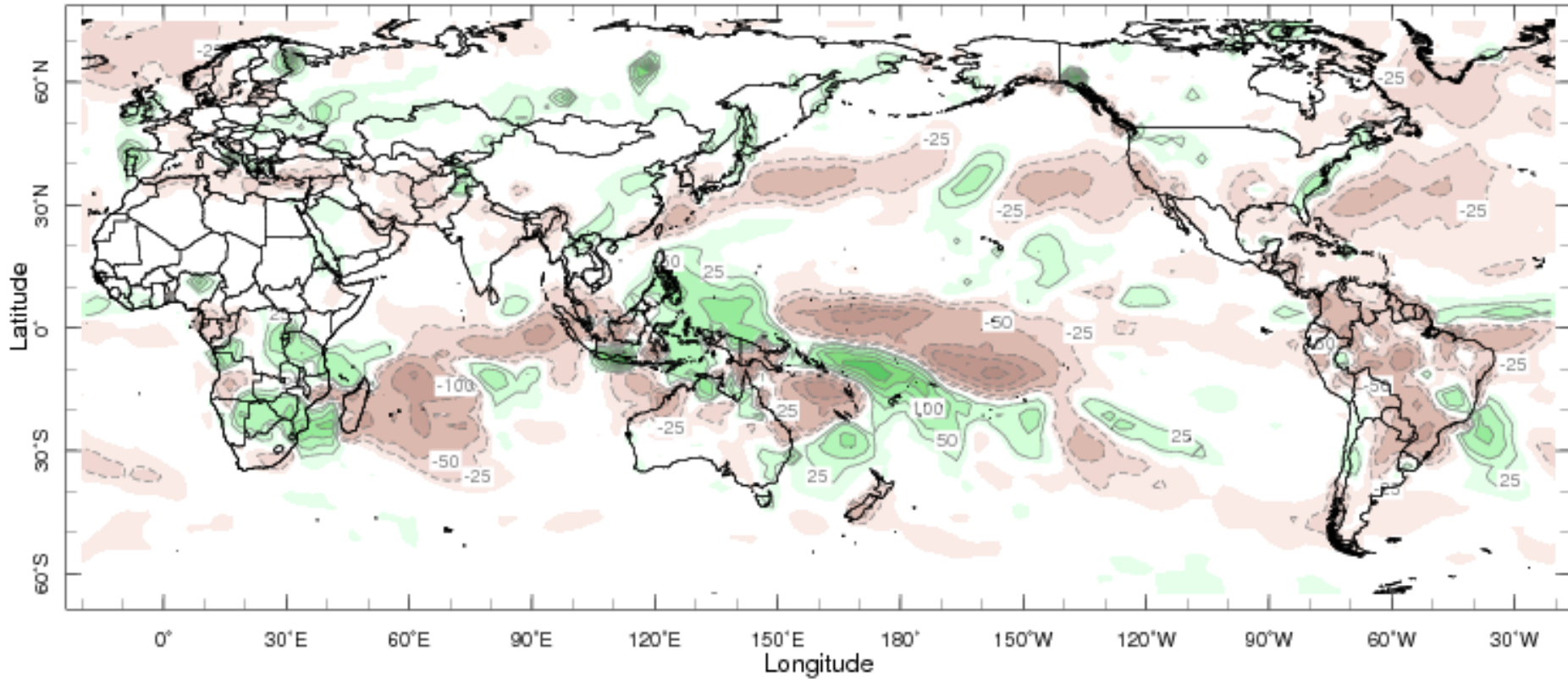
Satellite Rainfall February 2021

Accumulated Prop (mm) 28JAN2021 - 27FEB2021



Data Source: NCEP CMAP Precipitation

Satellite Rainfall Anomaly February 2021

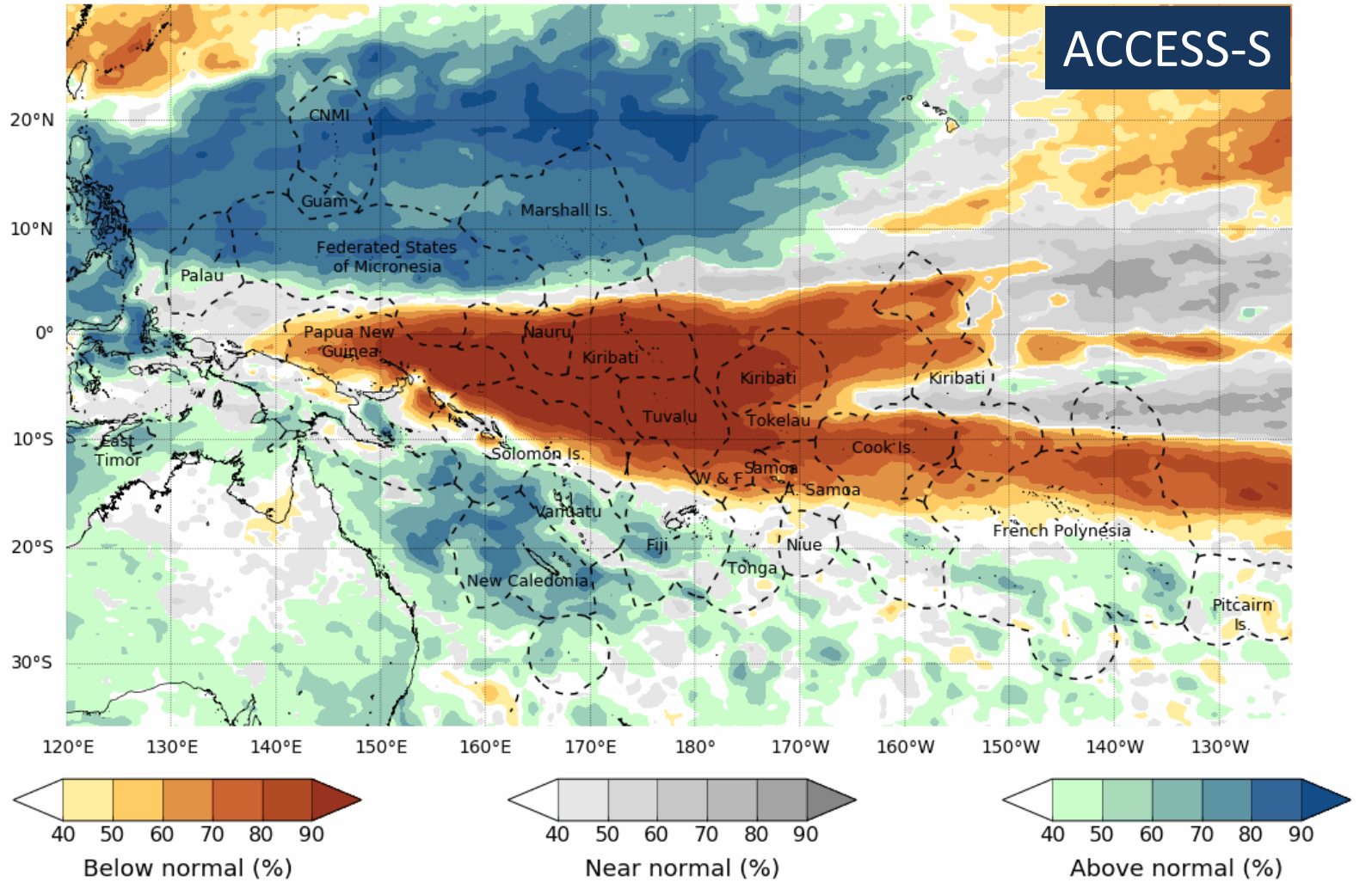


Feb 2021

Units = mm per month

Model Rainfall Predictions (MAM)

Tercile rainfall probabilities for
March to May 2021



Model: ACCESS-S1
Base period: 1990-2012
Model run: 01/03/2021
Issued: 04/03/2021

Model Rainfall Predictions (MAM)

C3S multi-system seasonal forecast

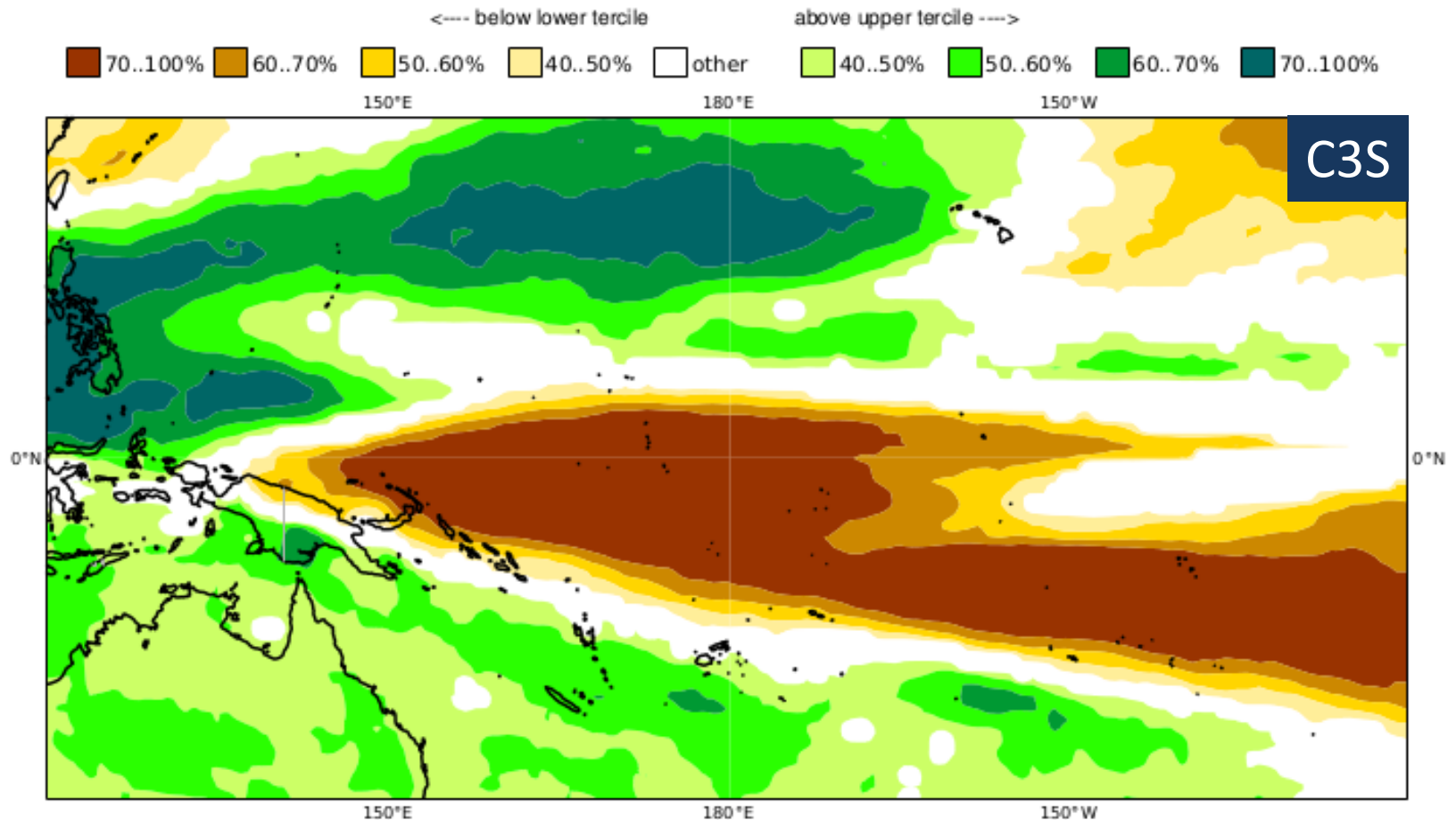
ECMWF/Met Office/Météo-France/CMCC/DWD/NCEP/JMA

Prob(most likely category of precipitation)

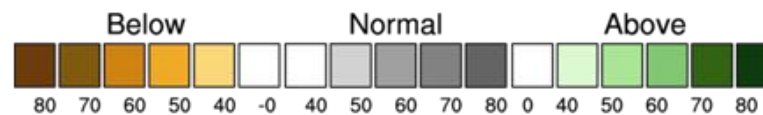
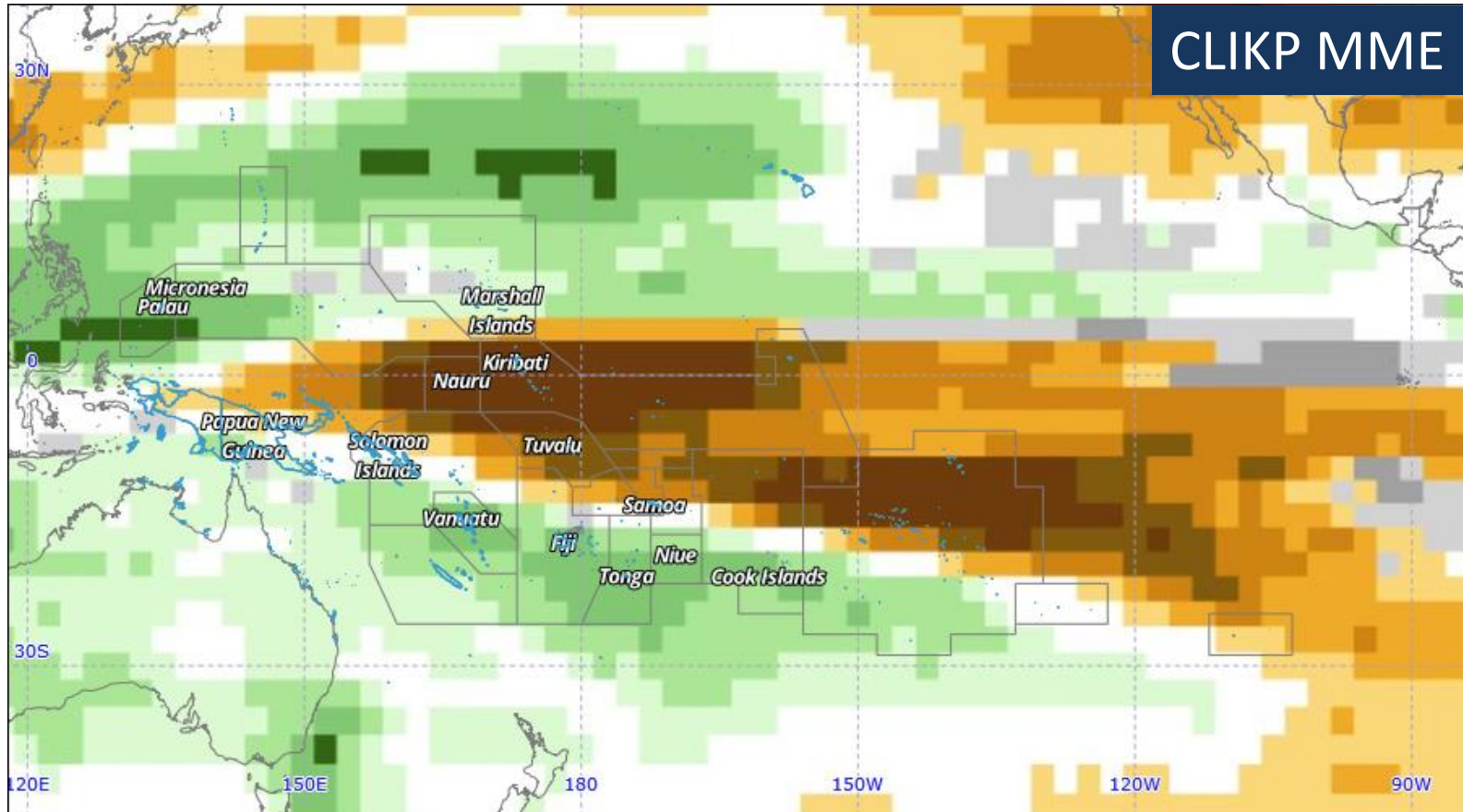
MAM 2021

Nominal forecast start: 01/02/21

Unweighted mean



Model Rainfall Predictions (MAM)



Year: 2021, Season: MAM, Lead Month: 3, Method: GAUS

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

Generated using CLIK® (2021-3-5)

© APEC Climate Center

Model Rainfall Predictions (MAM)

	Feb-Apr 2021		
	ACCESS-S	C3S	CLIKP
Cook Is North	Dark Red	Dark Red	Dark Red
Cook Is South	Light Green	Light Green	Light Green
Fiji West	Light Green	Light Green	Light Green
Fiji Central	Light Green	Light Green	Light Green
Fiji East	Light Green	Light Green	Light Green
Fiji North	Light Green	Light Green	Light Green
Fiji Rotuma	Light Green	Light Green	Light Green
FSM West	Light Green	Light Green	Light Green
FSM Central	Light Green	Light Green	Light Green
FSM East	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	Light Green	Light Green	Light Green
Nauru	Dark Red	Dark Red	Dark Red
Niue	Light Green	Light Green	Light Green
Palau	Light Green	Light Green	Light Green
PNG Momase	Light Green	Light Green	Light Green
PNG Is	Light Green	Light Green	Light Green
PNG South	Light Green	Light Green	Light Green
PNG Highlands	Light Green	Light Green	Light Green
Samoa	Light Green	Light Green	Light Green
Solomon Is West	Light Green	Light Green	Light Green
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	Dark Red	Dark Red	Dark Red
Vanuatu North	Light Green	Light Green	Light Green
Vanuatu South	Light Green	Light Green	Light Green

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

Note the inclusion of FSM and Nauru

Climate Model Summary for April to August 2021

Issued 12 March 2021 Next issue 12 April 2021

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

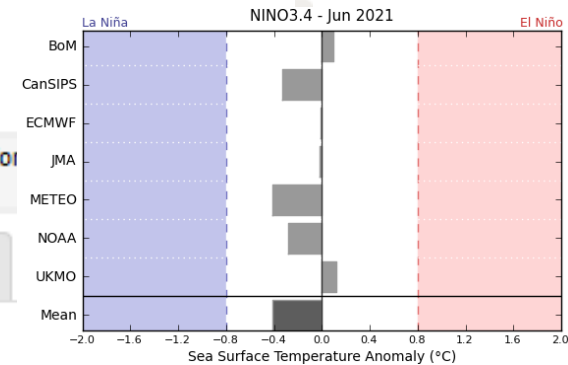
La Niña continues to weaken, but influence on Australian climate persists

Oceanic indicators of the El Niño-Southern Oscillation (ENSO) are now at neutral values, having warmed above La Niña thresholds in recent weeks. Atmospheric indicators, while also weakening, generally remain at La Niña levels. As a result, Australian climate patterns, at least during early autumn, are likely to continue to see an influence from La Niña, particularly in northern and eastern parts of the country.

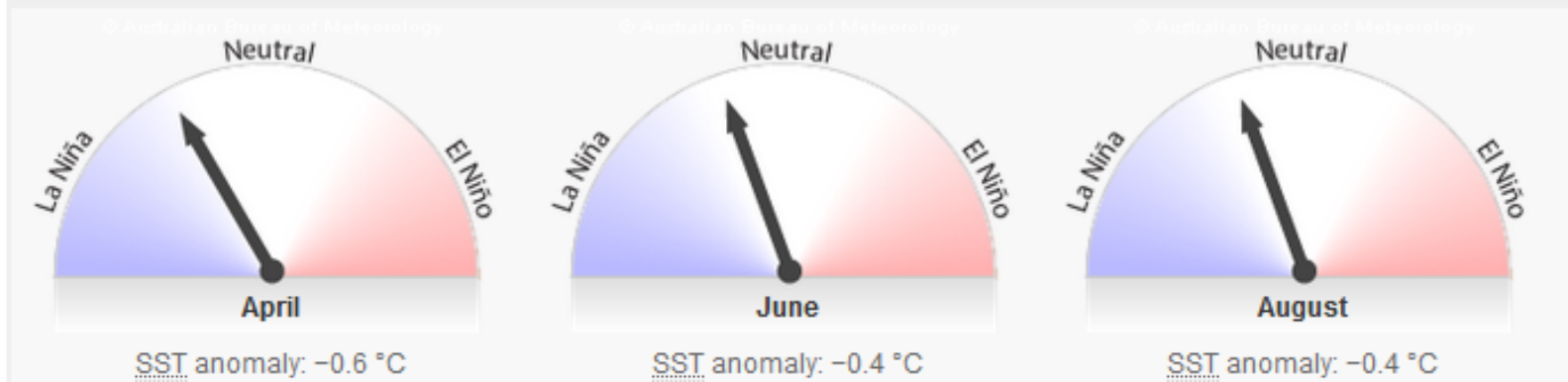
Model outlooks (which forecast the oceanic component of ENSO) indicate the ocean will remain at ENSO-neutral levels until the end of winter. It is likely that the atmospheric component of ENSO will also return to neutral levels during autumn.

The Indian Ocean Dipole (IOD) is currently neutral with models favouring a neutral outlook for autumn. During late winter, the surveyed models indicate potential for negative IOD values to develop, however model accuracy for this lead time is generally lower at this time of year than at other times, so these winter outlooks should be viewed with caution.

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



Average of international model outlooks for NINO3.4



Climate Model Summary

