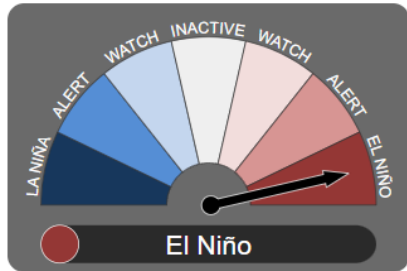


ENSO update - OCOF 196

15 February 2024

ENSO Update

El Niño persists as positive Indian Ocean Dipole continues to weaken

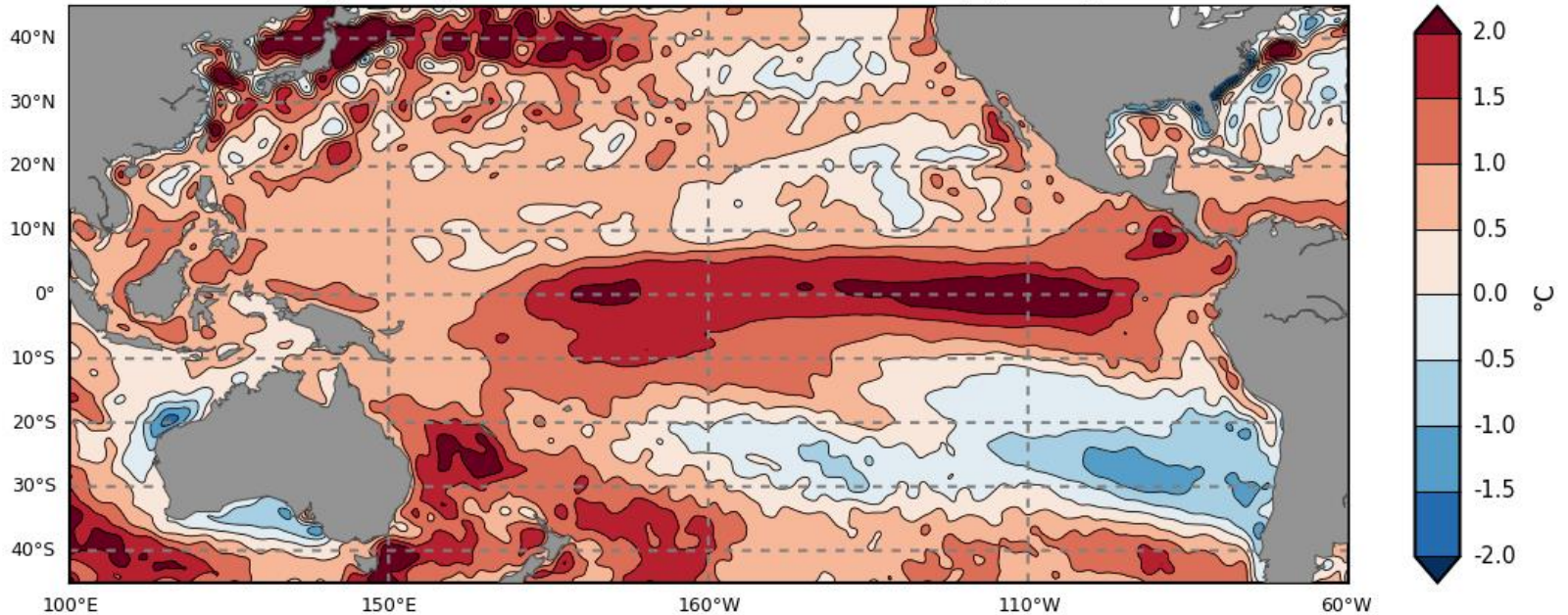


- The El Niño event continues in the tropical Pacific. Model forecasts indicate the warmth of sea surface temperatures (SSTs) is likely at or near its peak, with SSTs expected to remain above El Niño thresholds into the 2024 southern hemisphere autumn.
- Some atmospheric indicators have weakened over the past three weeks, and the SOI is currently neutral.

January 2024 SSTs

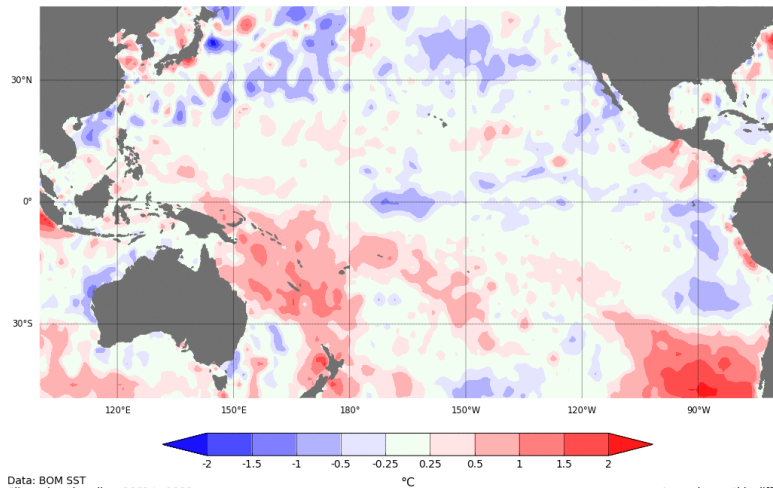
Pacific Ocean

Monthly Average Sea Surface Temperature Anomaly: January 2024



©Commonwealth of Australia 2024
Australian Bureau of Meteorology, COSPPac

Change in the monthly SST anomaly: January-2024 - December-2023

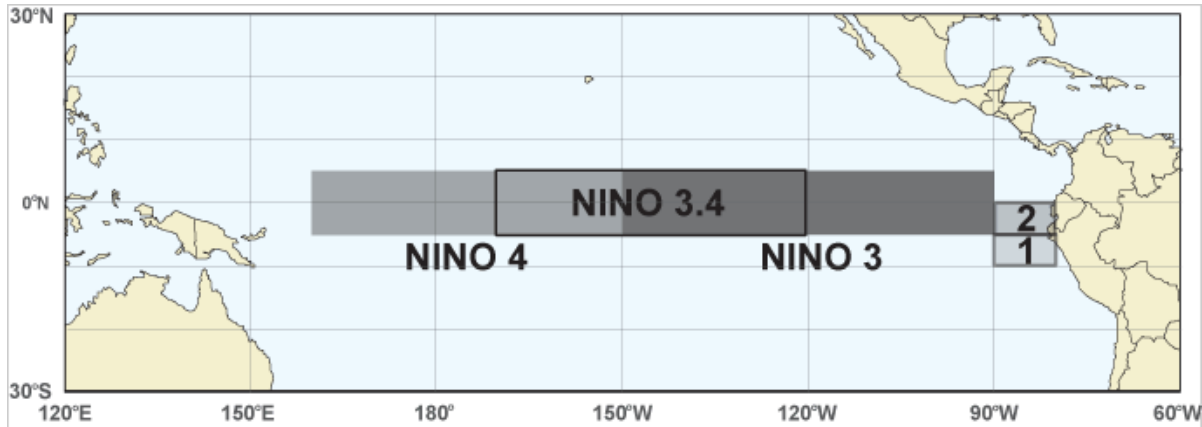


Data: BOM SST
Climatology baseline: 1961 to 1990
© Commonwealth of Australia 2024, Australian Bureau of Meteorology

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

Anomaly monthly difference
Created: 05/02/2024

NINO INDICES SST anomalies (°C)

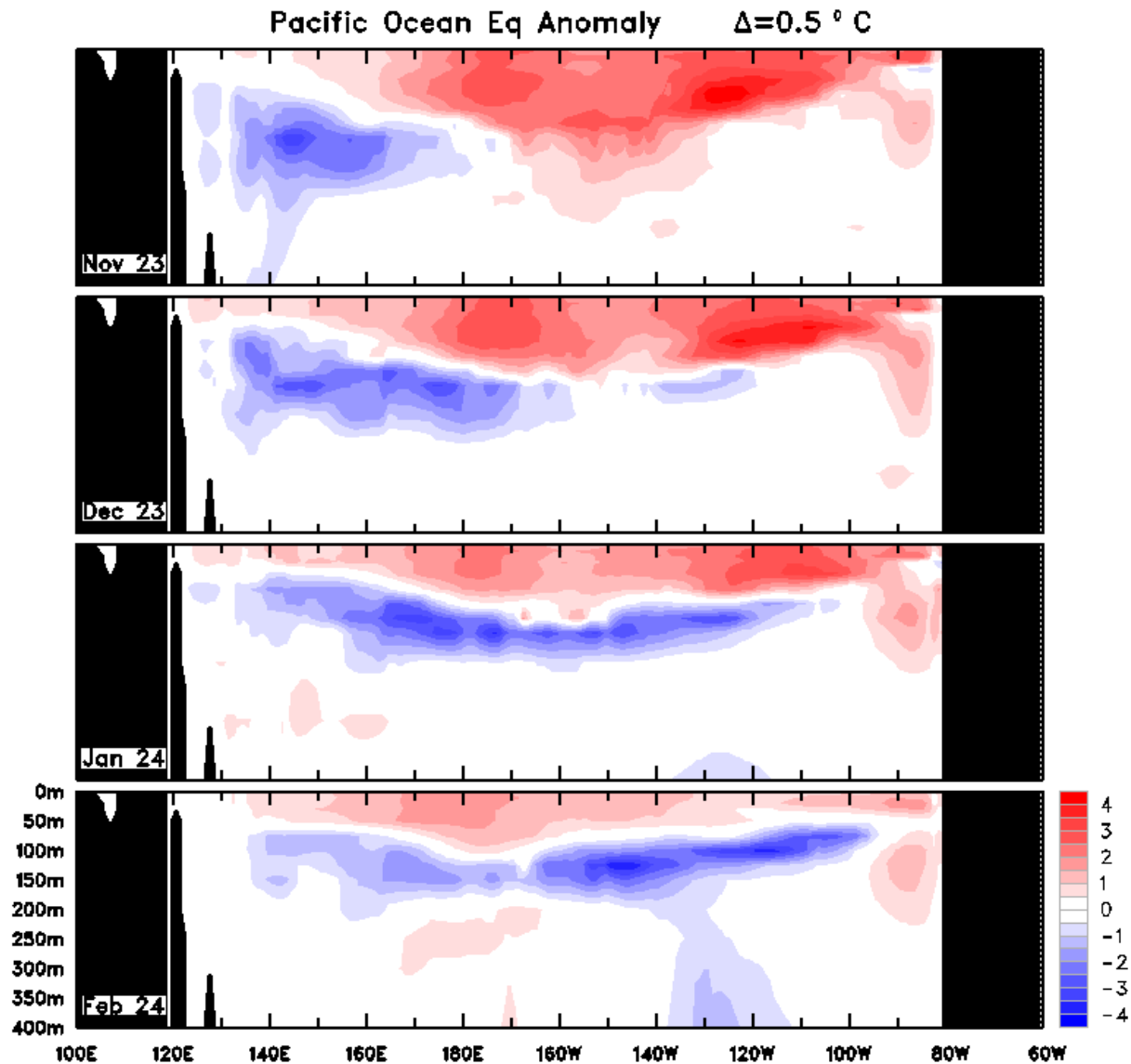


Index	December 2023	January 2024	Latest weekly
NINO3	+1.7	+1.5	+1.3
NINO3.4	+1.7	+1.4	+1.3
NINO4	+1.3	+1.2	+1.2

Weekly data for the week ending 11/02/2024

Equatorial Pacific sub-surface profile

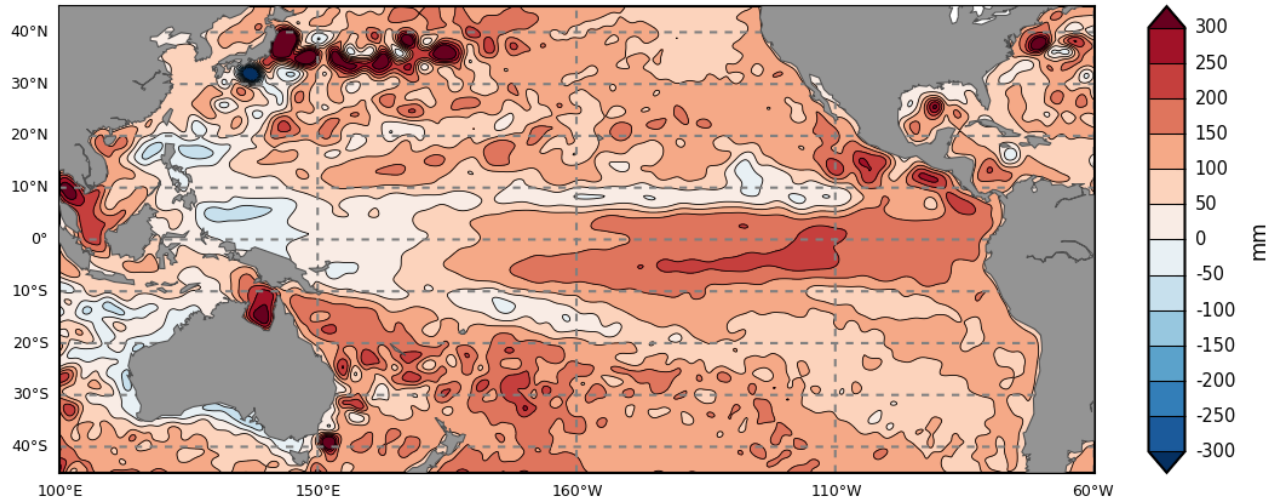
Bureau of Meteorology



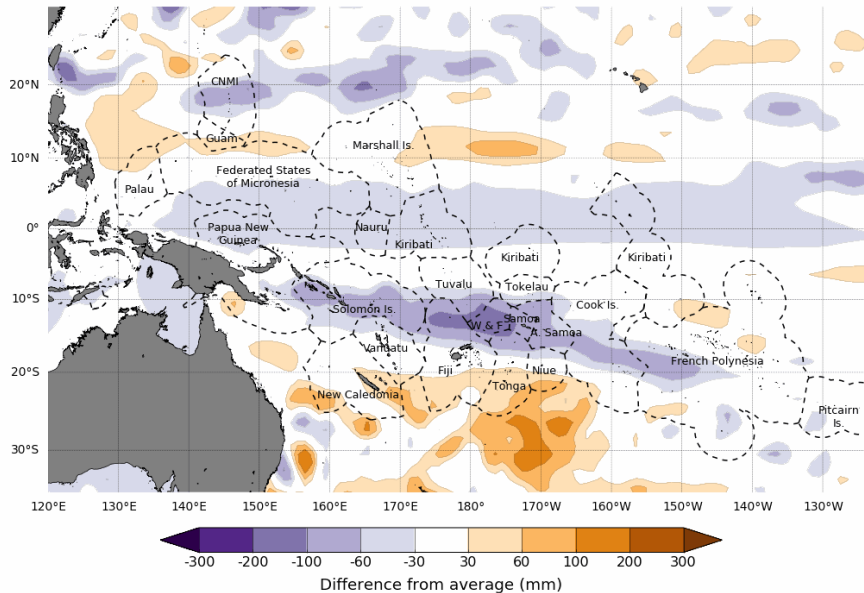
Analysis done Feb 8 22:15

January 2024 Sea Level Anomaly

Pacific Ocean
Monthly Near Real Time Sea Level Anomaly: January 2024

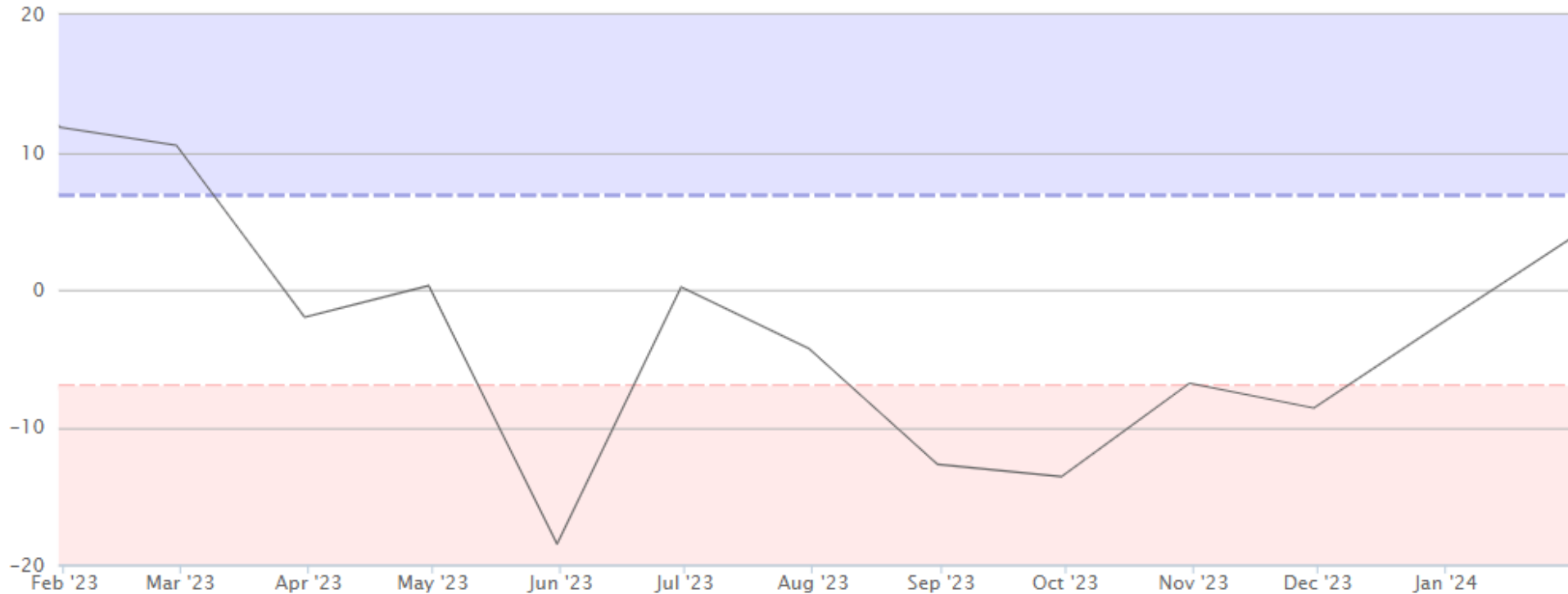


Difference from average sea surface height forecast for
March to May 2024



Southern Oscillation Index

Southern Oscillation Index - monthly

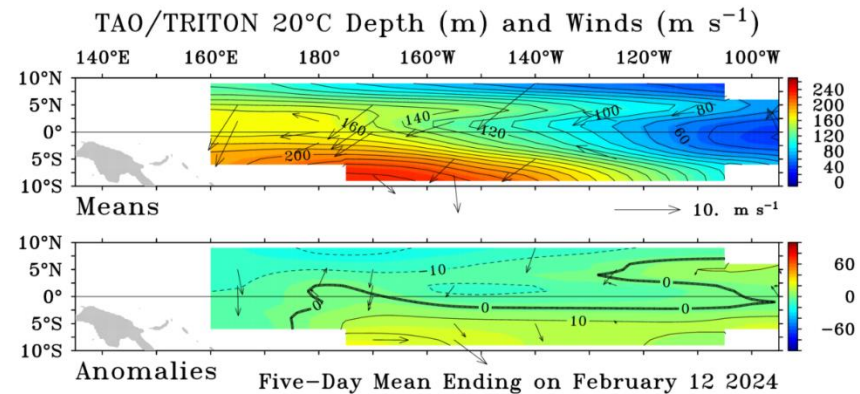
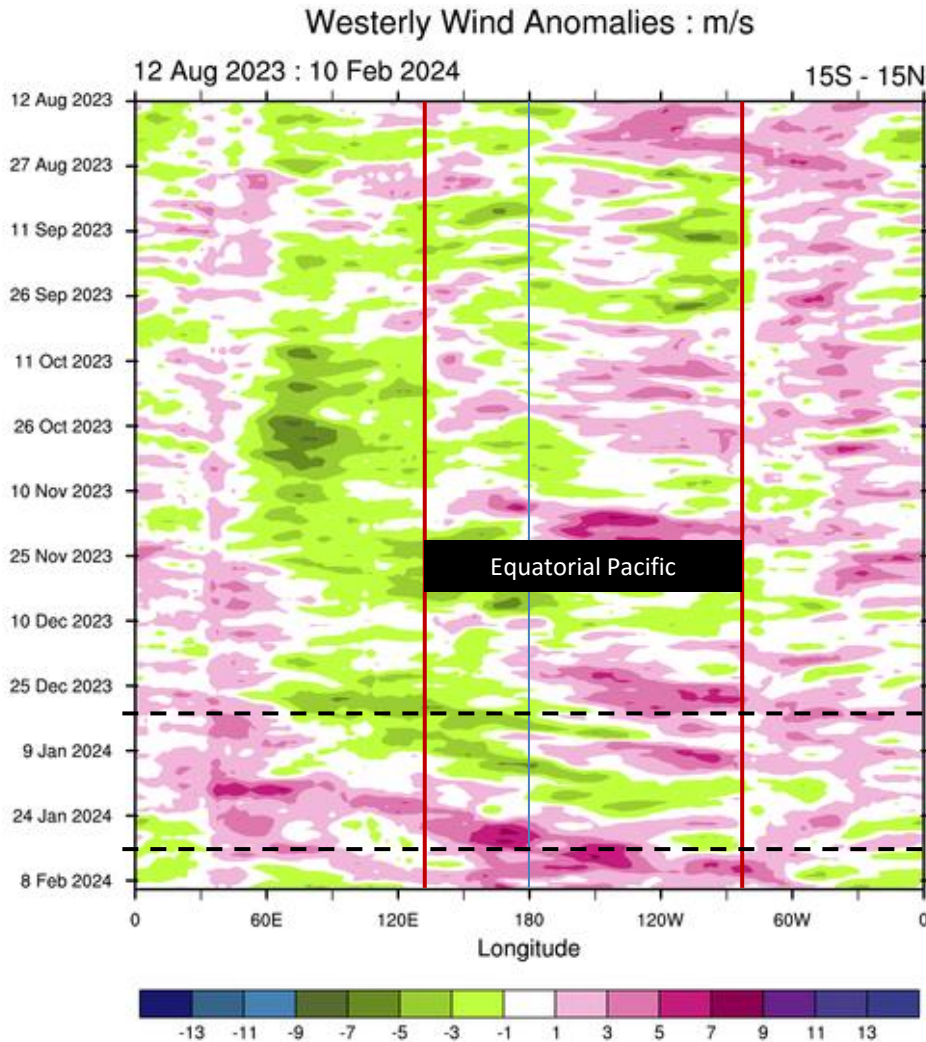


Southern Oscillation Index monthly data

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2024	+3.7	-	-	-	-	-	-	-	-	-	-	-
2023	+11.8	+10.5	-2.0	+0.3	-18.5	+0.2	-4.3	-12.7	-13.6	-6.8	-8.6	-2.4

At 12 February 2024: 30-day SOI = -11; 90-day SOI = -4

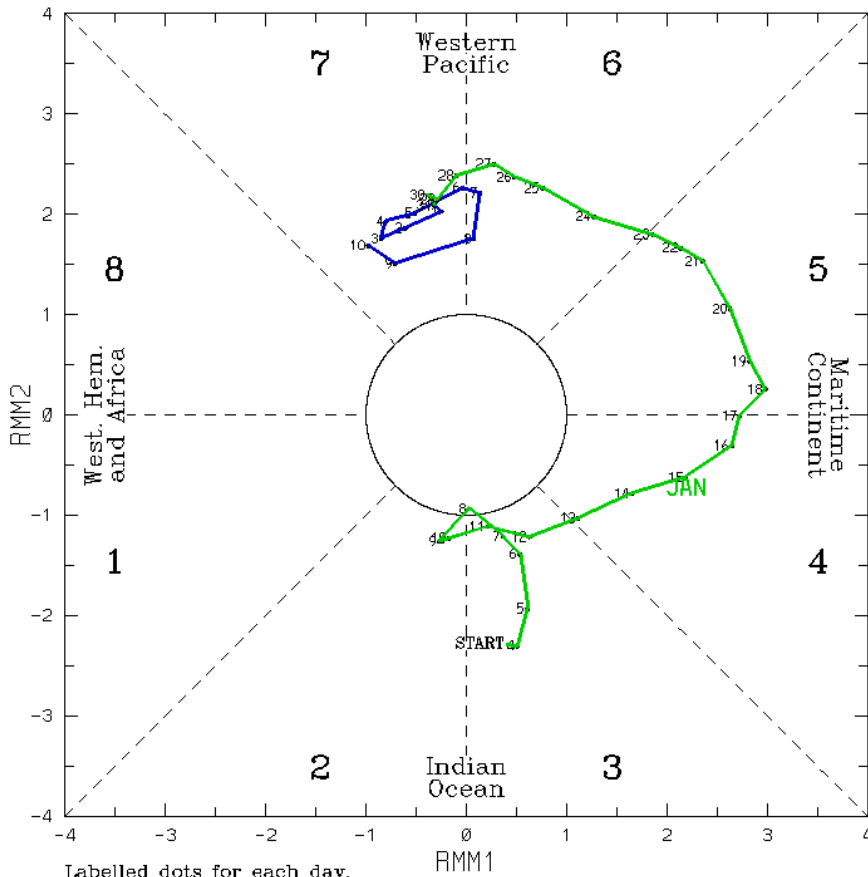
Equatorial Trade Winds



Global Tropical Moored Buoy Array Program Office, NOAA/PMEL

Madden-Julian Oscillation

(RMM1,RMM2) phase space for 2-Jan-2024 to 10-Feb-2024



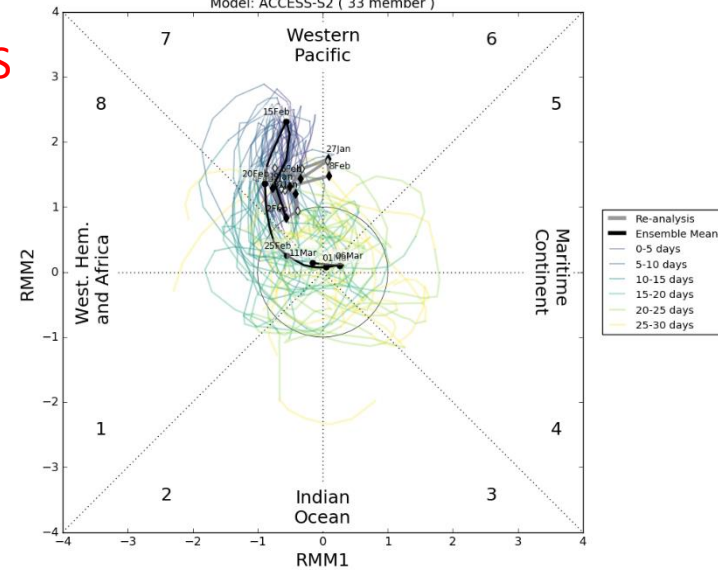
Labelled dots for each day.

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

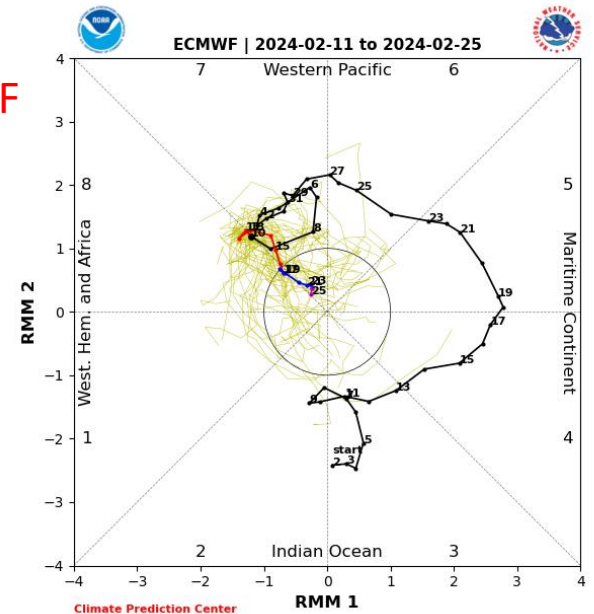
(C) Copyright Commonwealth of Australia 2024. Bureau of Meteorology
2024

ACCESS

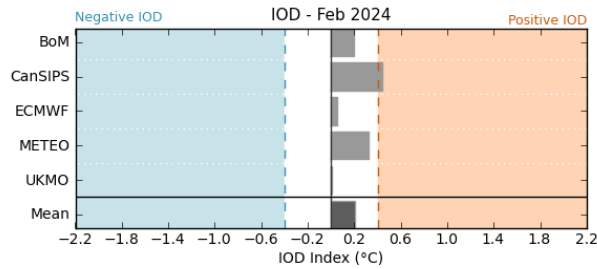
MJO Index Forecast initialised: 10 February 2024
Model: ACCESS-S2 (33 member)



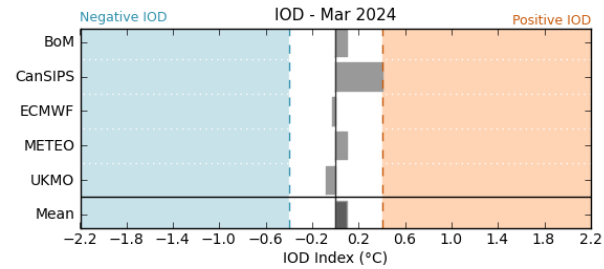
ECMWF



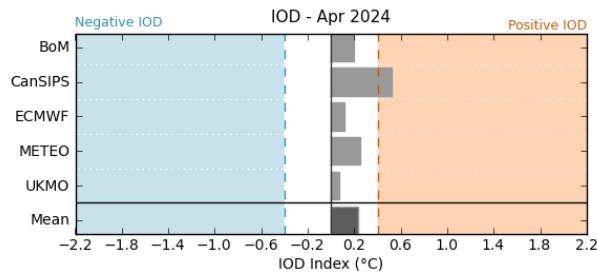
Indian Ocean Dipole (IOD)



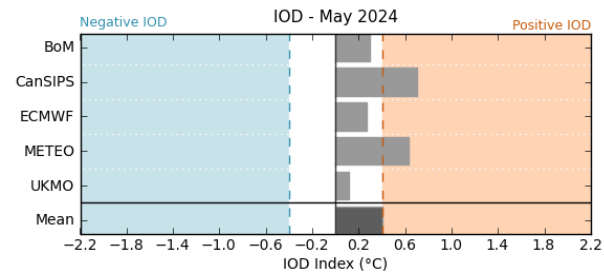
© Copyright Australian Bureau of Meteorology



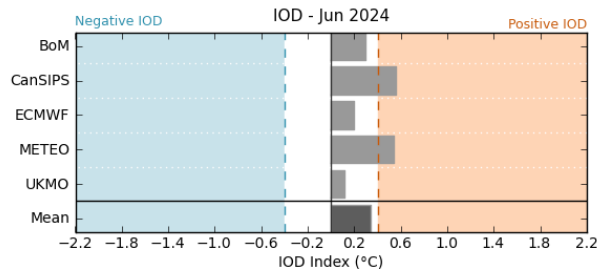
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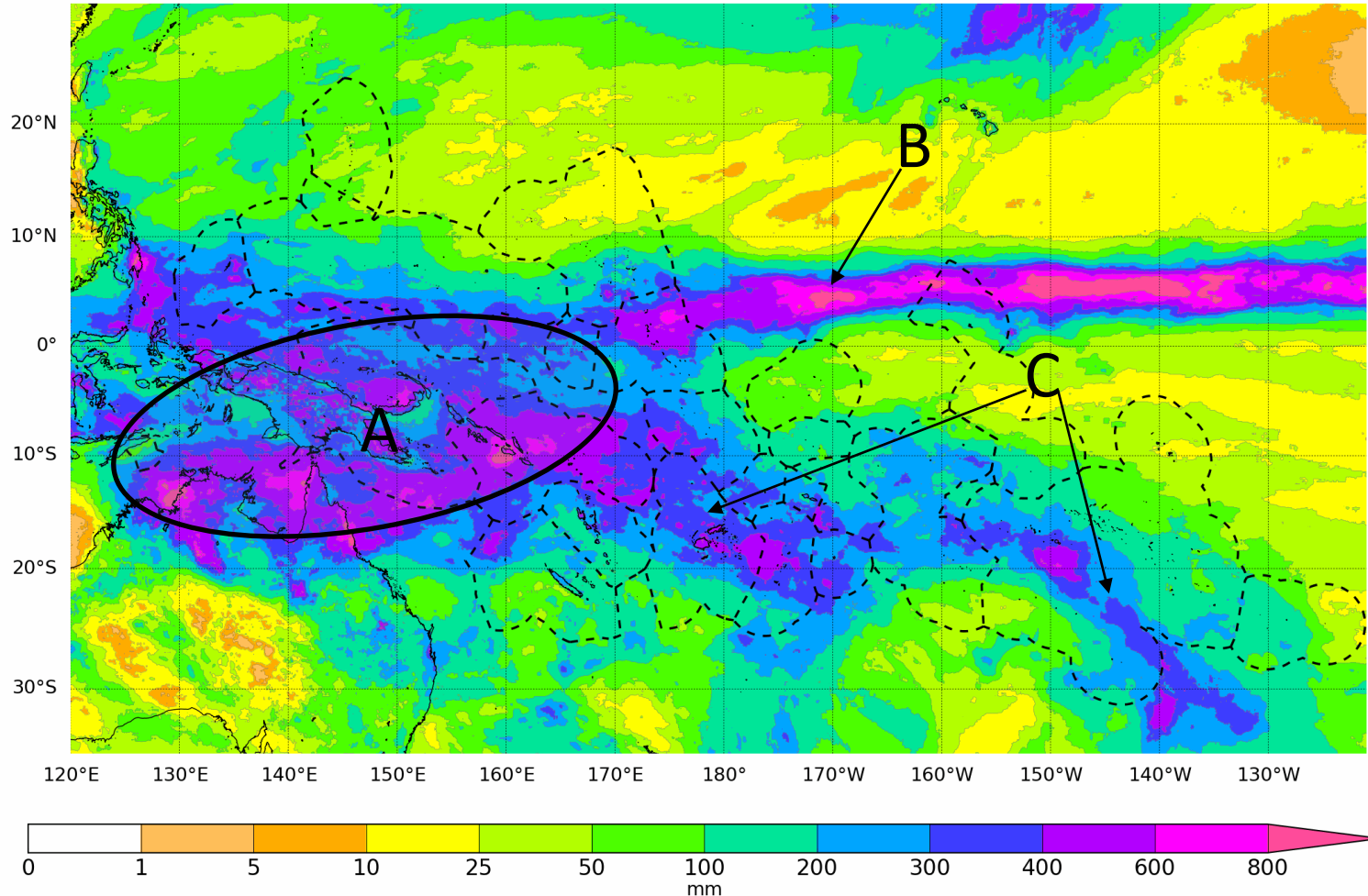
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Satellite Rainfall January 2024

1-month total rainfall ending January 2024



Data source: MSWEP

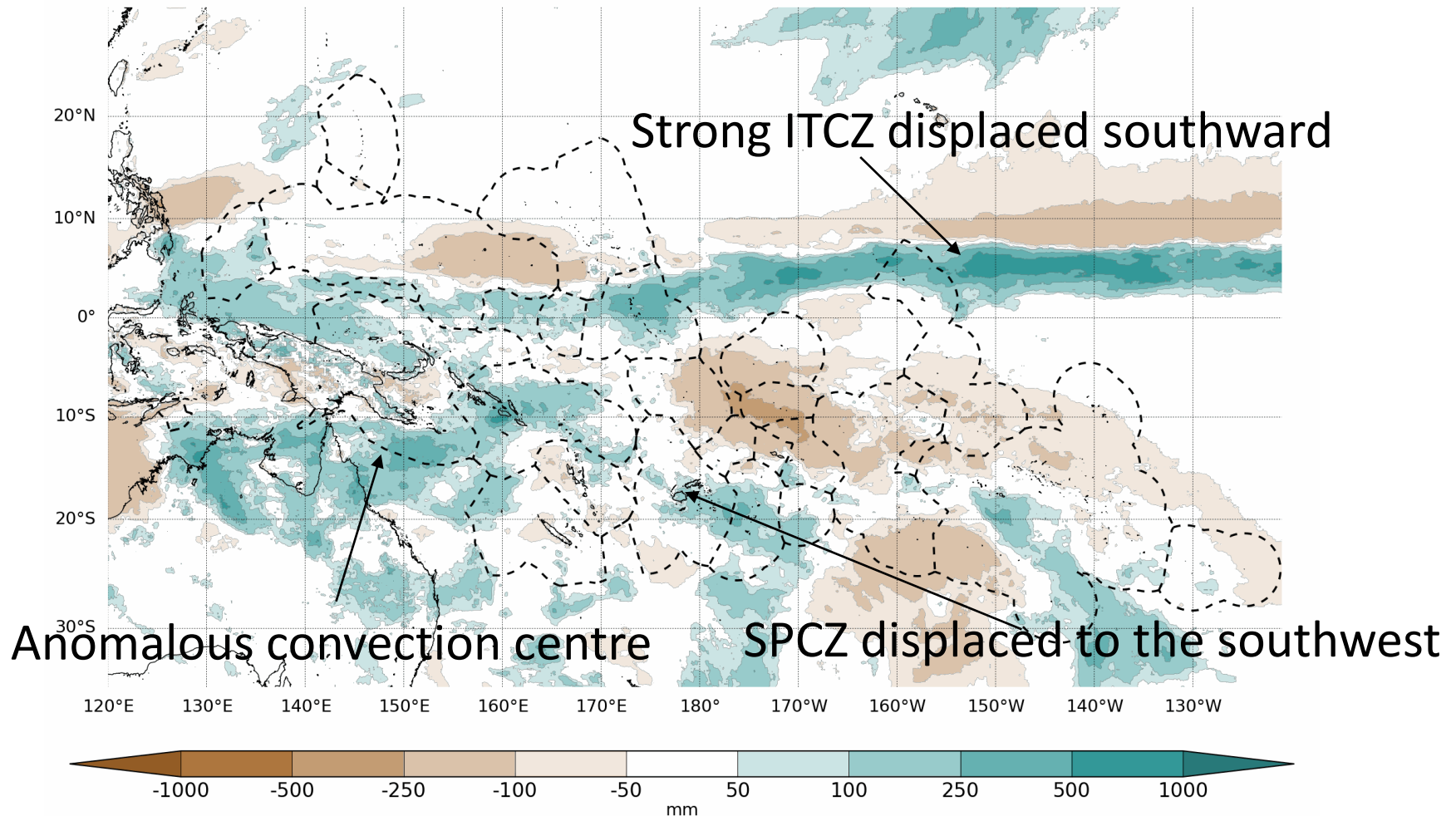
Run: 07/02/2024

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Shapefile data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at <http://www.marineregions.org/>.

Satellite Rainfall Anomaly January 2024

1-month total rainfall anomaly ending January 2024



Data source: MSWEP

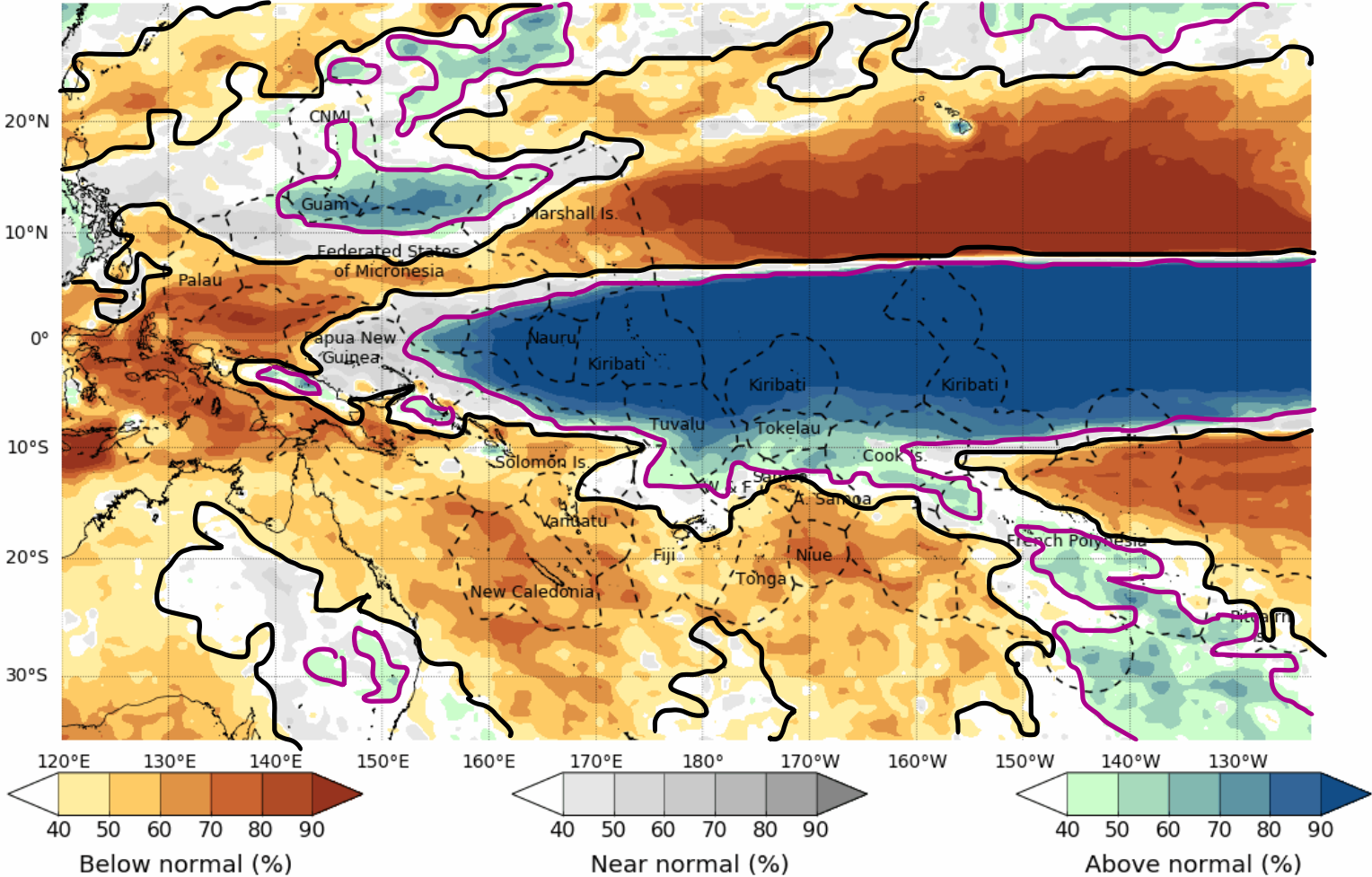
Run: 07/02/2024
Base period: 1980-2021

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Shapefile data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at <http://www.marineregions.org/>.

Forecast Verification: Nov-Jan

Tercile rainfall probabilities for
November 2023 to January 2024



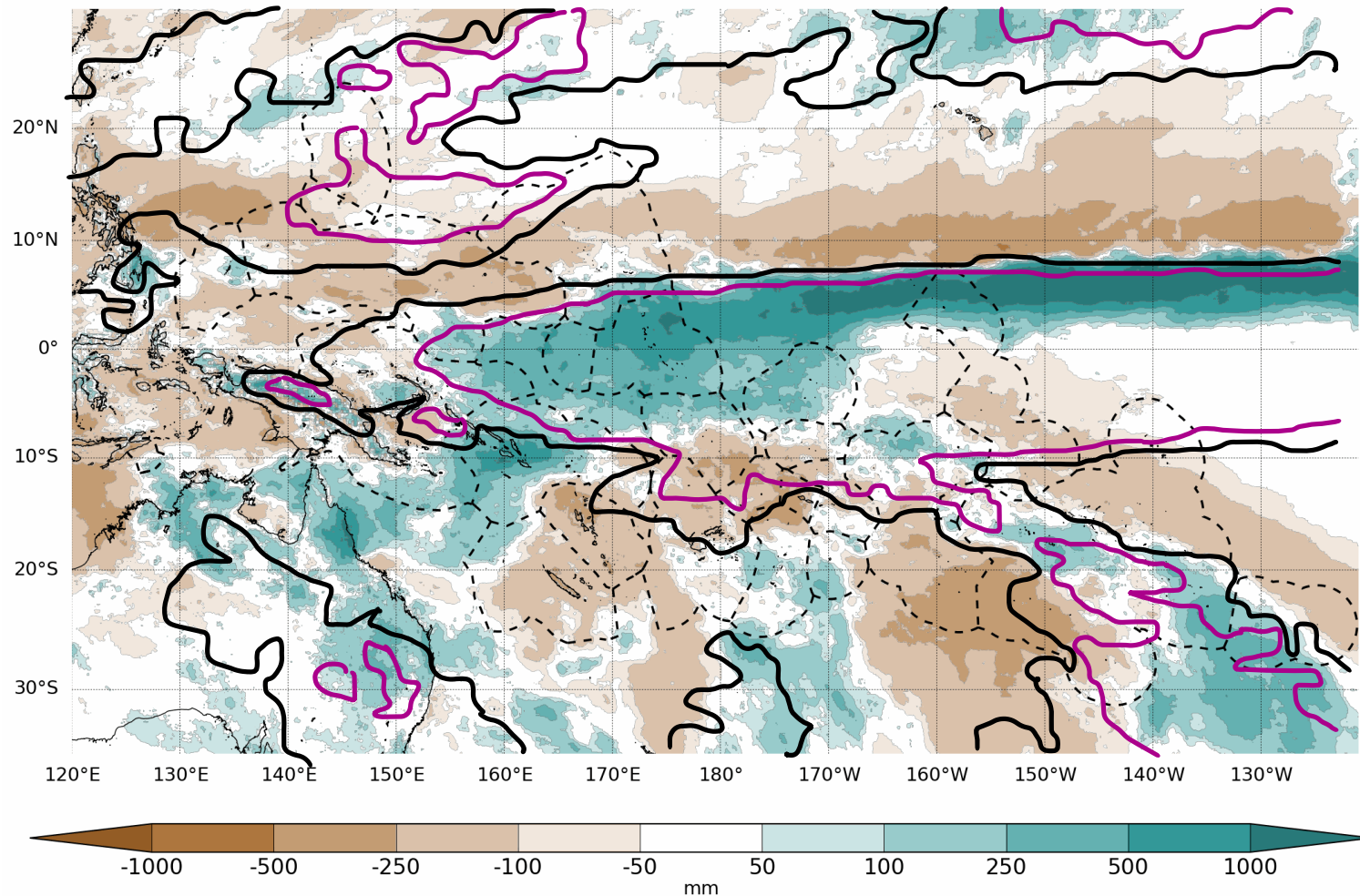
Base period: 1981-2018
Model: ACCESS-S2
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Model run: 30/10/2023
Issued: 01/11/2023

Shapefile data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at <http://www.marineregions.org/>.

Forecast Verification: Nov-Jan

3-month total rainfall anomaly ending January 2024

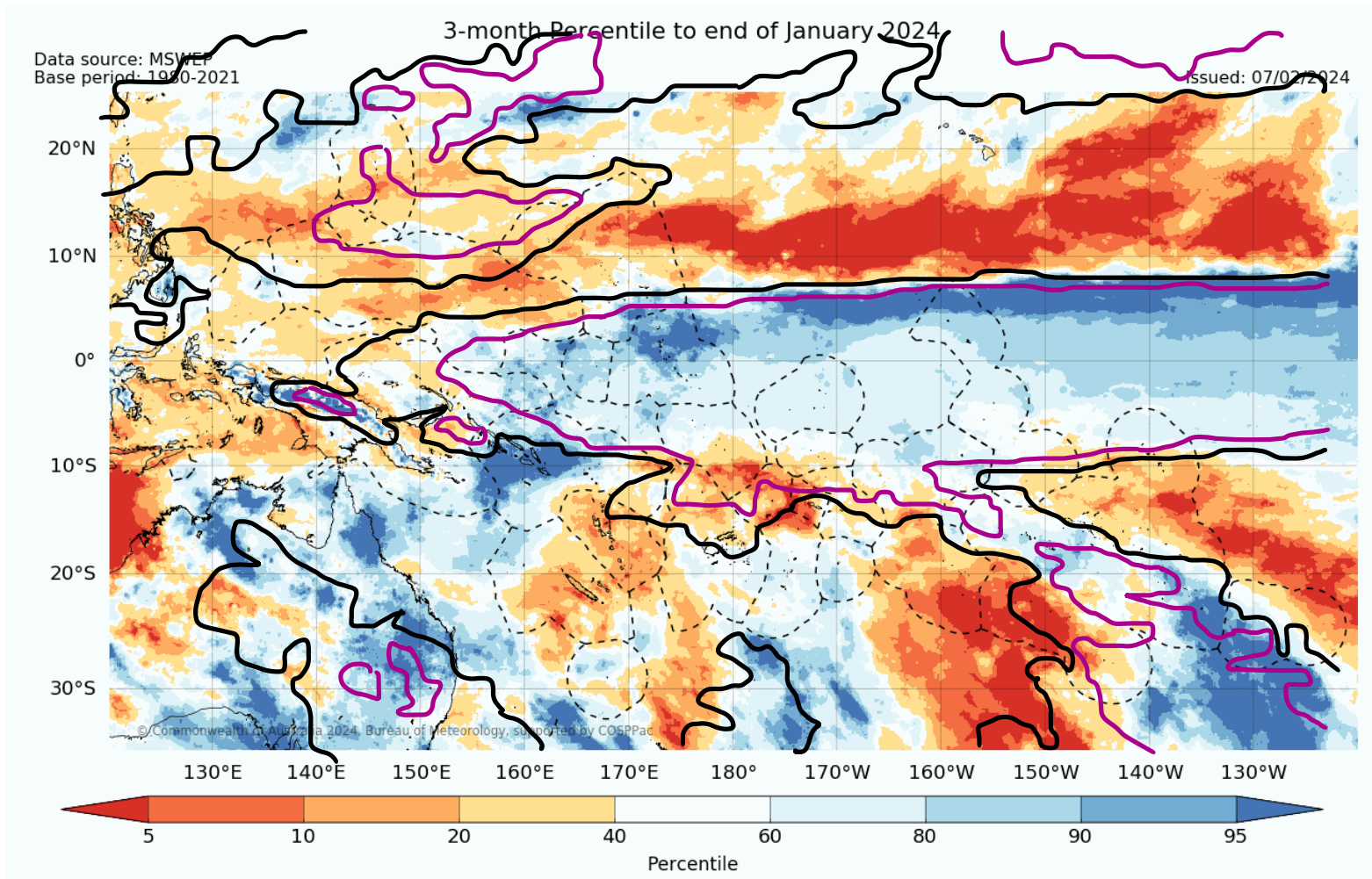


Data source: MSWEP

Run: 07/02/2024
Base period: 1980-2021

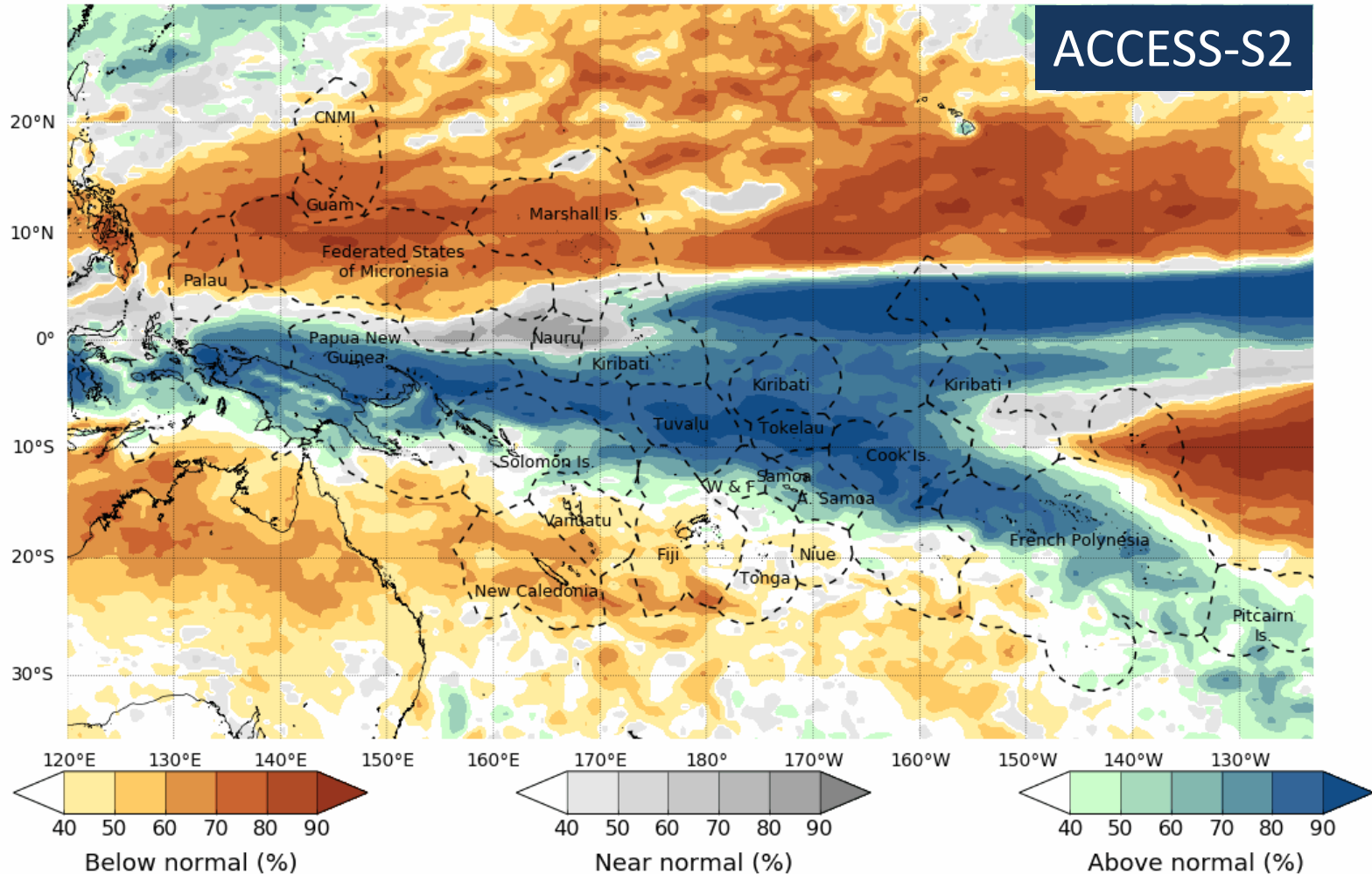
© Commonwealth of Australia 2024, Australian Bureau of Meteorology, supported by COSPPac
Shapefile data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at <http://www.marineregions.org/>.

Forecast Verification: Nov-Jan



Model Rainfall Predictions (FMA)

Tercile rainfall probabilities for
February to April 2024



Base period: 1981-2018
Model: ACCESS-S2

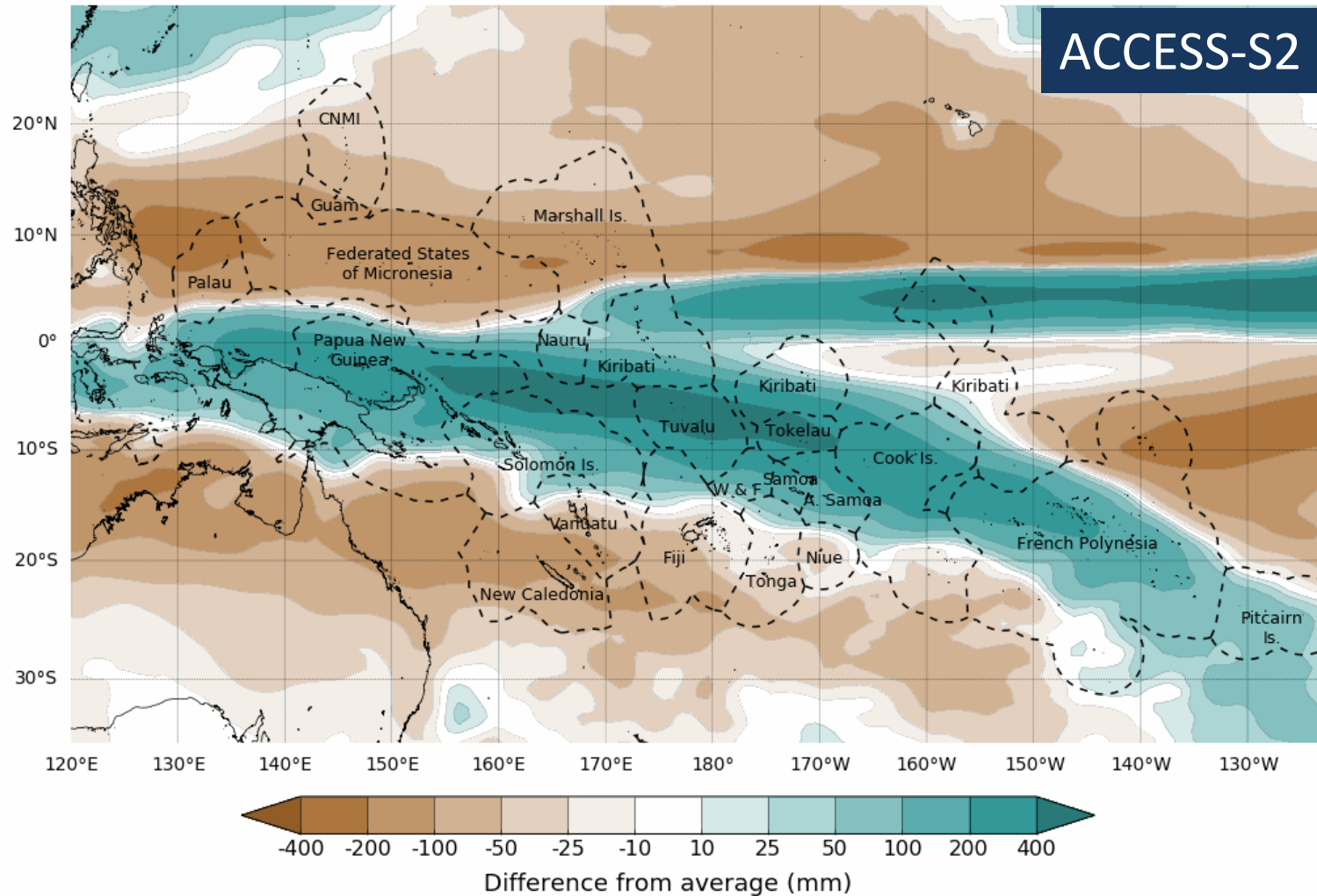
© Commonwealth of Australia 2024, Australian Bureau of Meteorology

Model run: 29/01/2024
Issued: 31/01/2024

Shapefile data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at <http://www.marinerregions.org/>.

Difference from Average (FMA)

Difference from average rainfall forecast for
February to April 2024



Base period: 1981-2018
Model: ACCESS-S2
© Commonwealth of Australia 2024, Australian Bureau of Meteorology

Model run: 29/01/2024
Issued: 31/01/2024

Shapefile data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at <http://www.marineregions.org/>.

Model Rainfall Predictions (FMA)

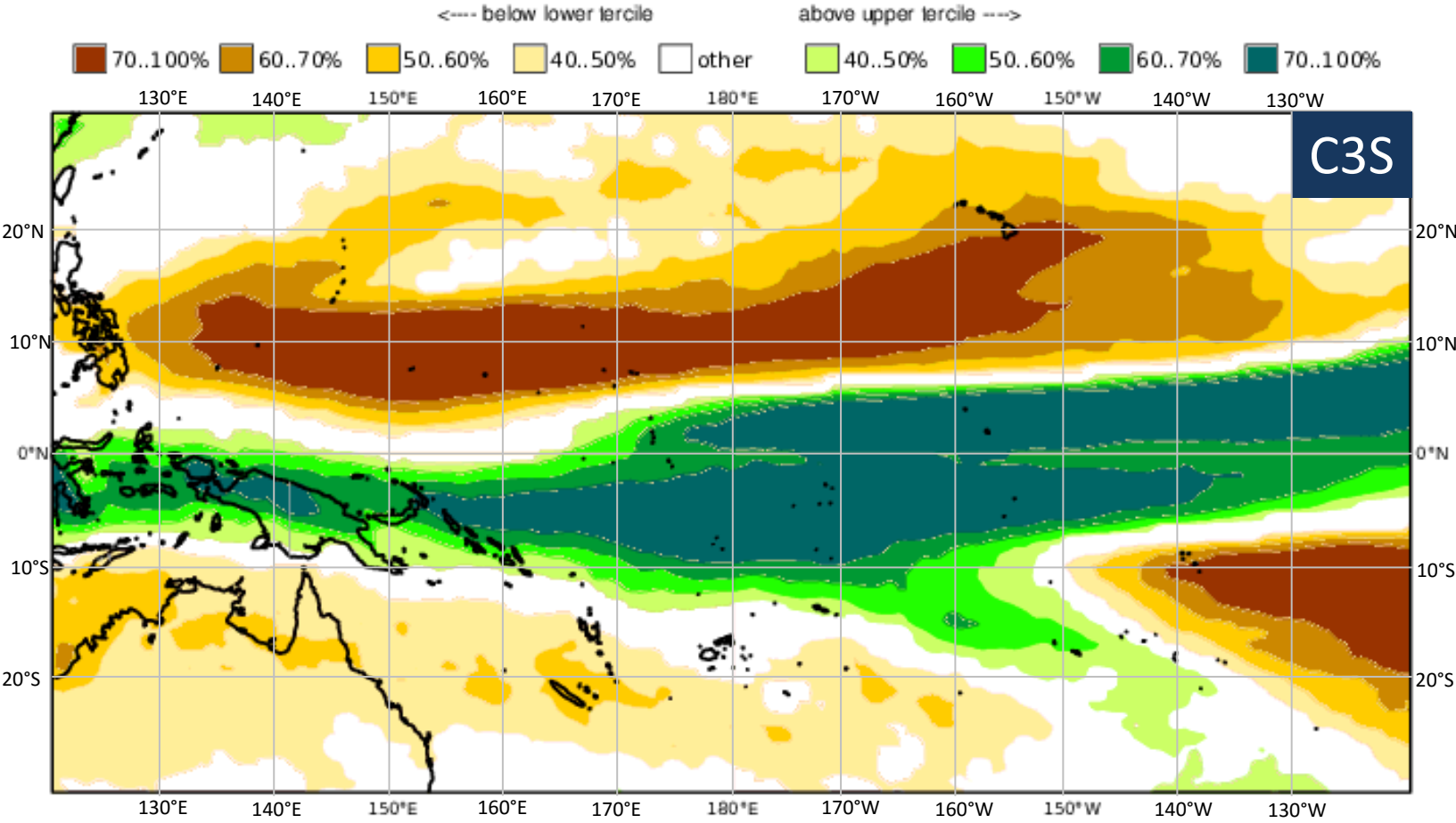
C3S multi-system seasonal forecast ECMWF/Met Office/Météo-France/CMCC/DWD/NCEP/JMA/ECCC

Prob(most likely category of precipitation)

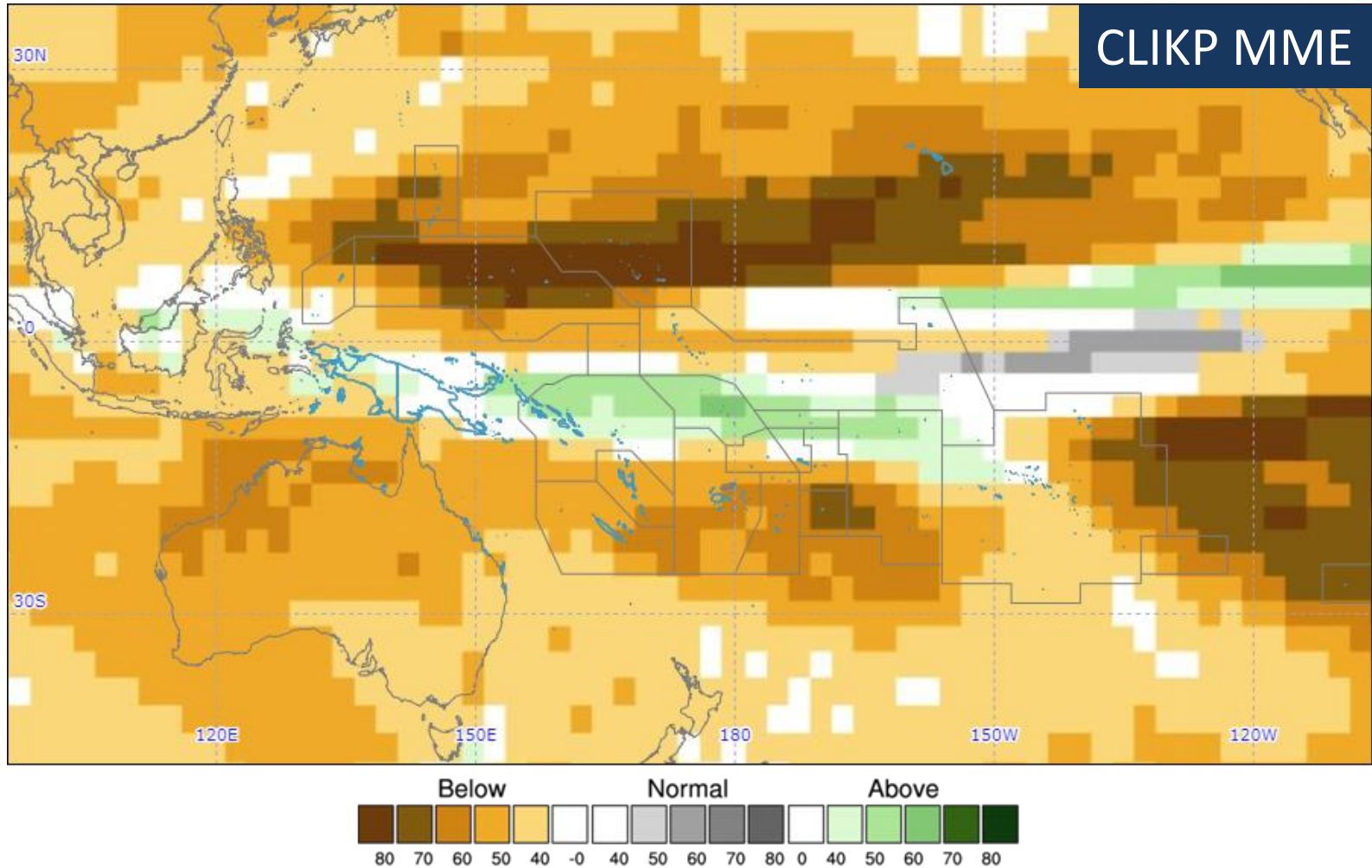
FMA 2024

Nominal forecast start: 01/01/24

Unweighted mean



Model Rainfall Predictions (FMA)



Year: 2024, Season: FMA, Lead Month: 3, Method: GAUS

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

Generated using CLIK® (2024-2-7)

© APEC Climate Center

Model Rainfall Predictions (FMA)

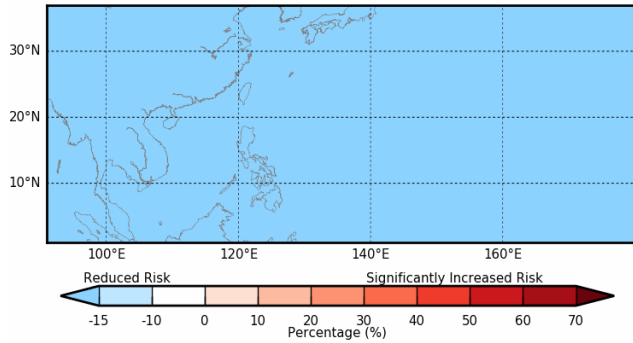
February to April 2024			
	ACCESS-S	C3S	CLIKP
Cook Is North	Blue	Light Green	Light Green
Cook Is South	White	Yellow	Orange
Fiji West	Yellow	White	Orange
Fiji Central	Yellow	White	White
Fiji East	White	White	Orange
Fiji North	Yellow	White	Orange
Fiji Rotuma	Light Green	Light Green	Yellow
FSM West	Orange	Orange	Orange
FSM Central	Orange	White	Orange
FSM East	Orange	White	Orange
Kiribati West	Light Green	Blue	Yellow
Kiribati Central	Blue	Blue	White
Kiribati East	Blue	Blue	White
RMI North	Orange	Orange	Orange
RMI Central	Orange	White	Orange
RMI South	Grey	White	Orange
Nauru	Grey	Light Green	Yellow
Niue	Yellow	Yellow	Orange
Palau	Orange	Orange	Yellow
PNG Momase	Blue	Light Green	White
PNG Is	Blue	Light Green	White
PNG South	Light Green	Light Green	White
PNG Highlands	Light Green	Light Green	White
Samoa	Light Green	Light Green	Yellow
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	White	Orange
Tonga Central	White	Yellow	Orange
Tonga South	Grey	White	Orange
Tuvalu North	Blue	Blue	Light Green
Tuvalu Central	Blue	Blue	Light Green
Tuvalu South	Blue	Light Green	Light Green
Vanuatu North	Yellow	Yellow	Orange
Vanuatu South	Orange	Yellow	Orange

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

TC Outlooks

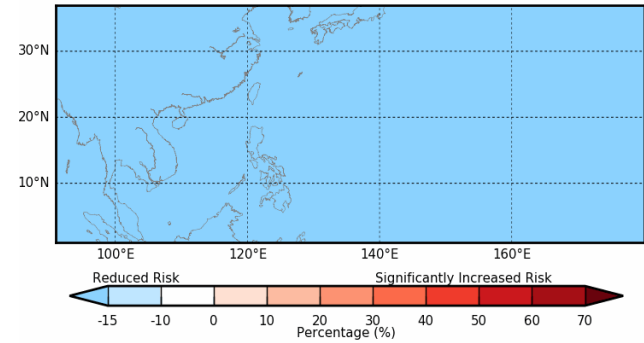
Northwest Pacific

Difference from normal chance of Tropical Cyclone's in the Northern Pacific
Forecast period: 19/02/2024 - 25/02/2024



Calibrated Model anomaly probability in overlapping 15 x 20 degree boxes
© Commonwealth of Australia 2024, Australian Bureau of Meteorology Model: ACCESS_S2 Model Run: 11/02/2024 Issued: 13/02/2024

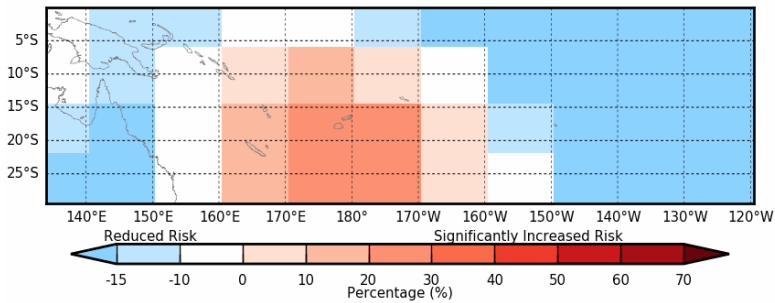
Difference from normal chance of Tropical Cyclone's in the Northern Pacific
Forecast period: 26/02/2024 - 03/03/2024



Calibrated Model anomaly probability in overlapping 15 x 20 degree boxes
© Commonwealth of Australia 2024, Australian Bureau of Meteorology Model: ACCESS_S2 Model Run: 11/02/2024 Issued: 13/02/2024

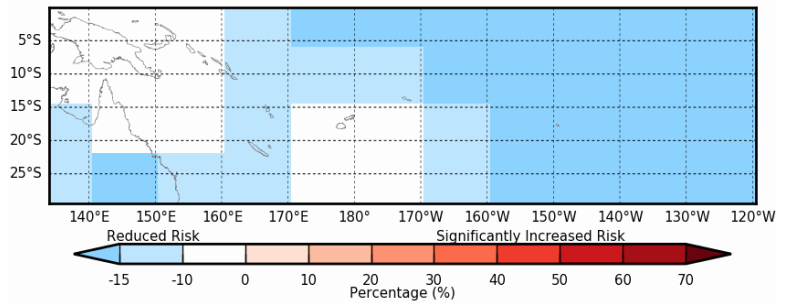
South Pacific

Difference from normal chance of Tropical Cyclone's in the South Pacific
Forecast period: 19/02/2024 - 25/02/2024



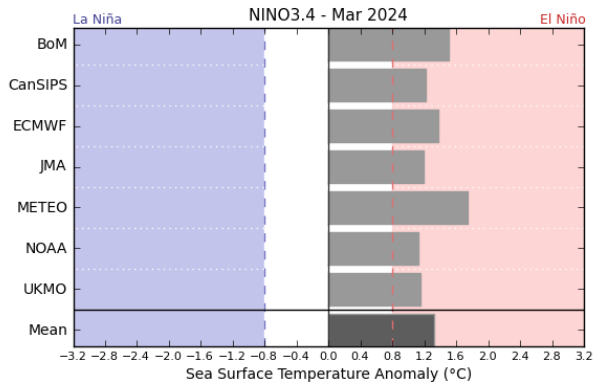
Calibrated Model anomaly probability in overlapping 15 x 20 degree boxes
© Commonwealth of Australia 2024, Australian Bureau of Meteorology Model: ACCESS_S2 Model Run: 11/02/2024 Issued: 13/02/2024

Difference from normal chance of Tropical Cyclone's in the South Pacific
Forecast period: 26/02/2024 - 03/03/2024

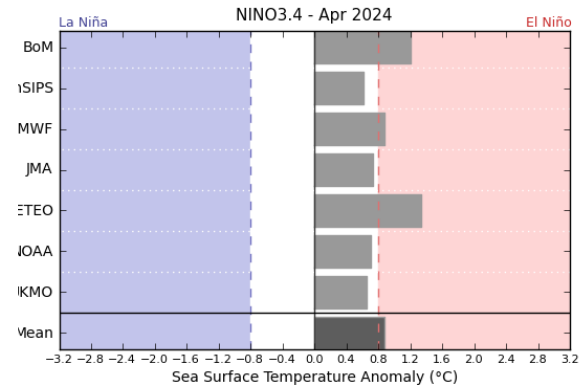


Calibrated Model anomaly probability in overlapping 15 x 20 degree boxes
© Commonwealth of Australia 2024, Australian Bureau of Meteorology Model: ACCESS_S2 Model Run: 11/02/2024 Issued: 13/02/2024

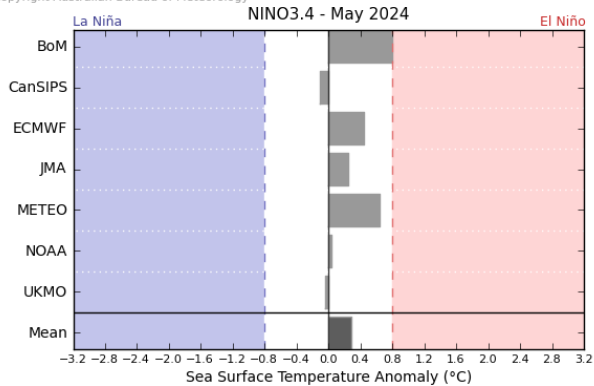
Climate Model Summary



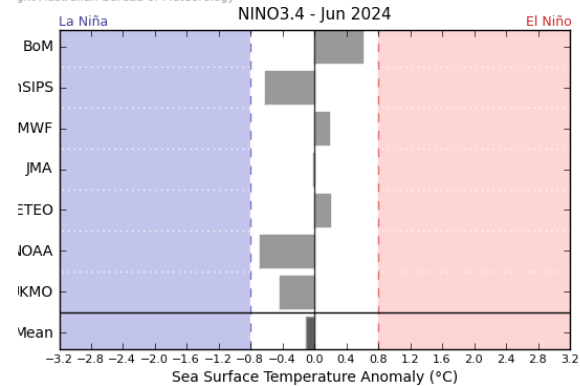
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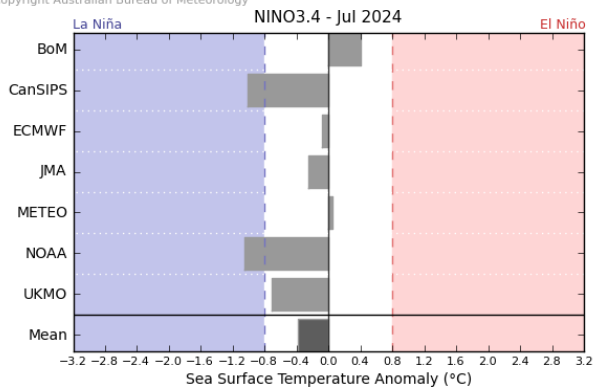
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IRI Climate Model Summary

Model Predictions of ENSO from Jan 2024

