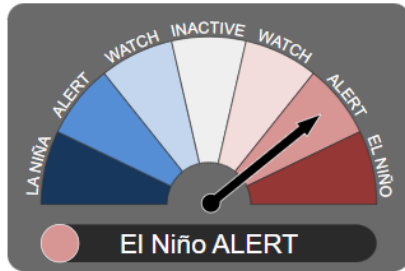


# ENSO update - OCOF 189

15 June 2023

# ENSO Update

## El Niño ALERT activated

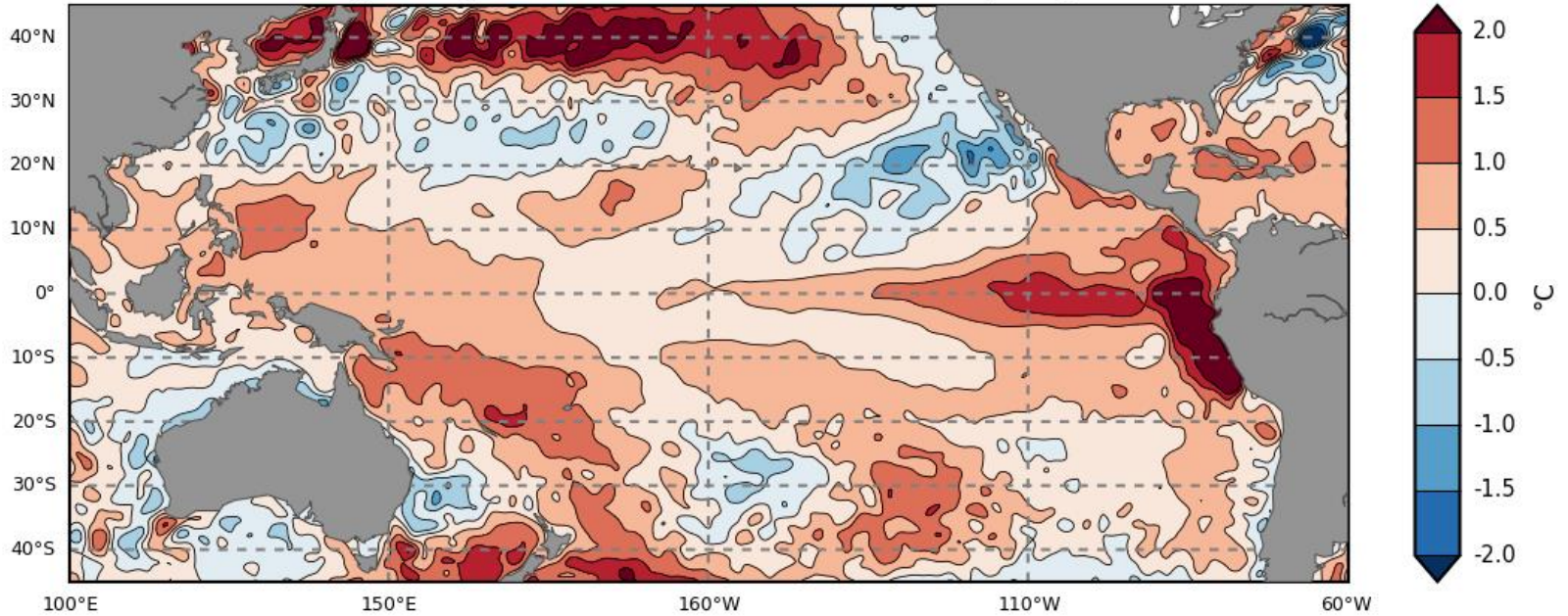


- The ENSO outlook has been shifted to El Niño ALERT. This means that while the El Niño–Southern Oscillation (ENSO) is currently neutral, there is approximately a 70% chance of El Niño forming in 2023. This is roughly three times the normal chance of an El Niño. An El Niño ALERT is not a guarantee that El Niño will occur, but it is an indication that most of the typical precursors of an event are in place.
- Oceanic ENSO indicators have warmed to El Niño thresholds. Models are forecasting that further warming is likely, with ocean temperatures expected to persist above El Niño thresholds in the central and eastern Pacific until at least the end of spring.
- The Southern Oscillation Index (SOI) has recently reached El Niño thresholds, with the 60-day SOI value at  $-10.6$ . Trade winds are currently close to average and cloudy conditions persist near the dateline. The broadscale atmospheric pressure patterns are not typical of an El Niño. These current conditions indicate the Pacific Ocean and atmosphere are not yet reinforcing each other, as is the case during El Niño events.

# May 2023 SSTs

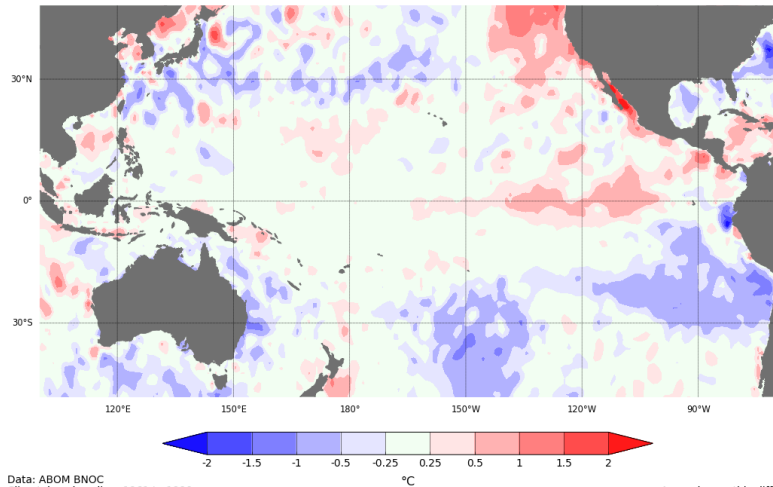
Pacific Ocean

Monthly Average Sea Surface Temperature Anomaly: May 2023



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Australian Bureau of Meteorology, COSPPac

Change in the monthly SST anomaly: May-2023 - April-2023

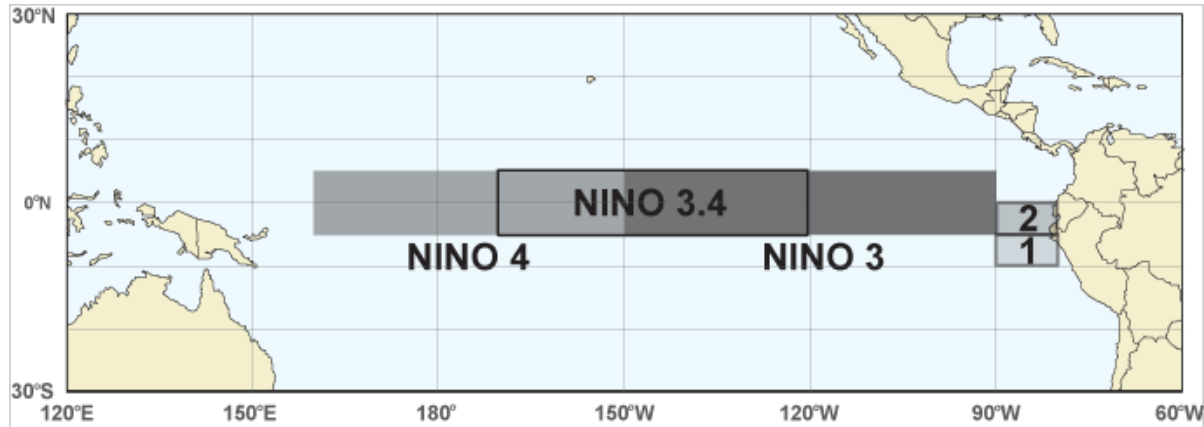


Data: ABOM BNOIC  
Climatology baseline: 1961 to 1990  
© Commonwealth of Australia 2023, Australian Bureau of Meteorology

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

Anomaly monthly difference  
Created: 05/06/2023

# NINO INDICES SST anomalies (°C)

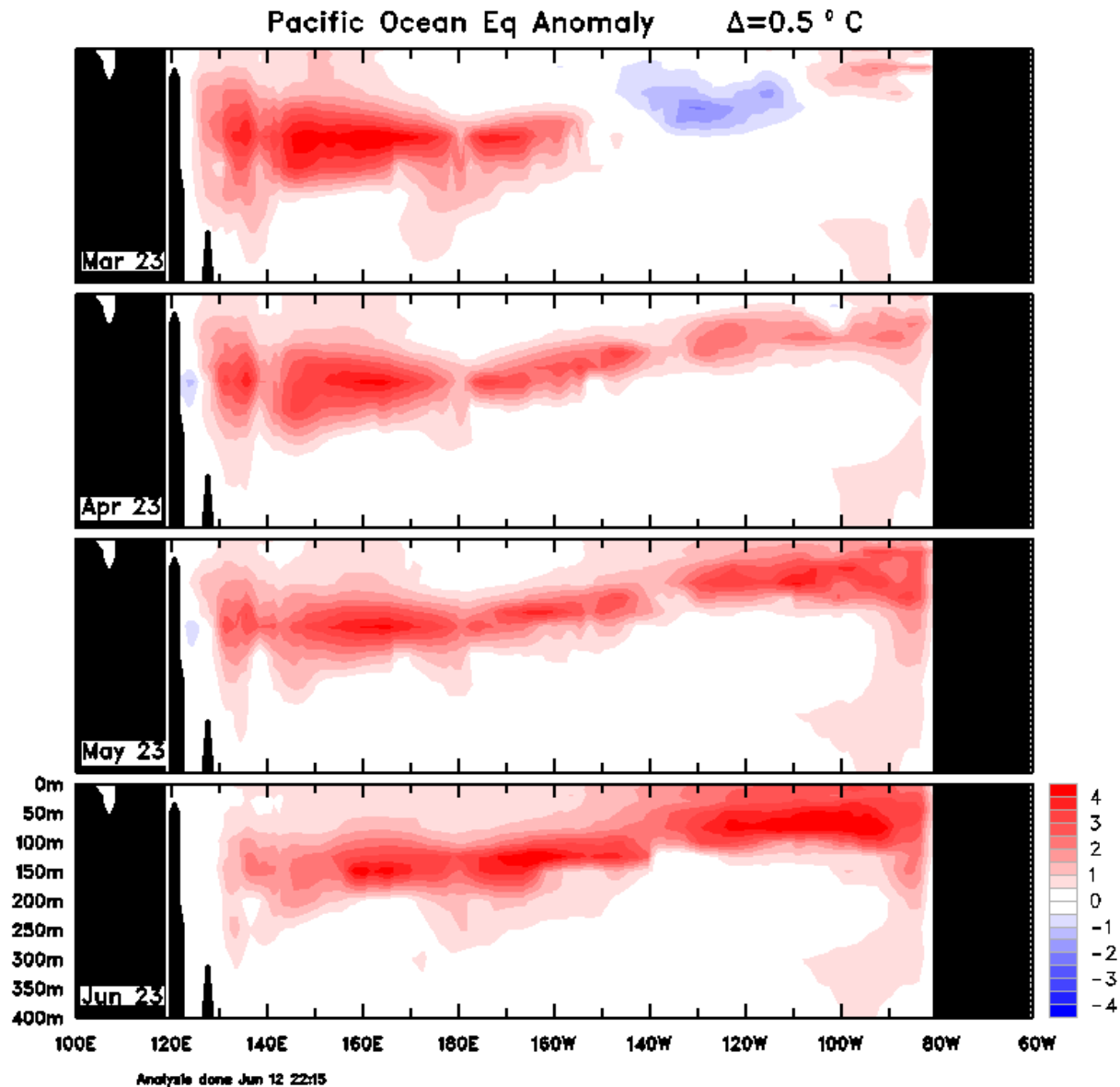


Index	Apr 2023	May 2023	Latest weekly
NINO3	+0.7	+1.0	+1.4
NINO3.4	+0.3	+0.5	+0.9
NINO4	+0.3	+0.4	+0.7

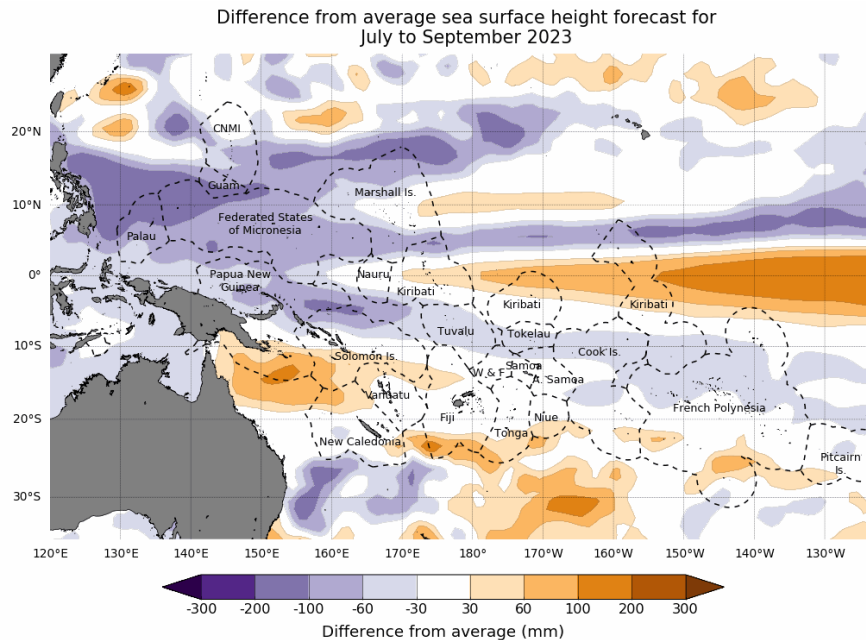
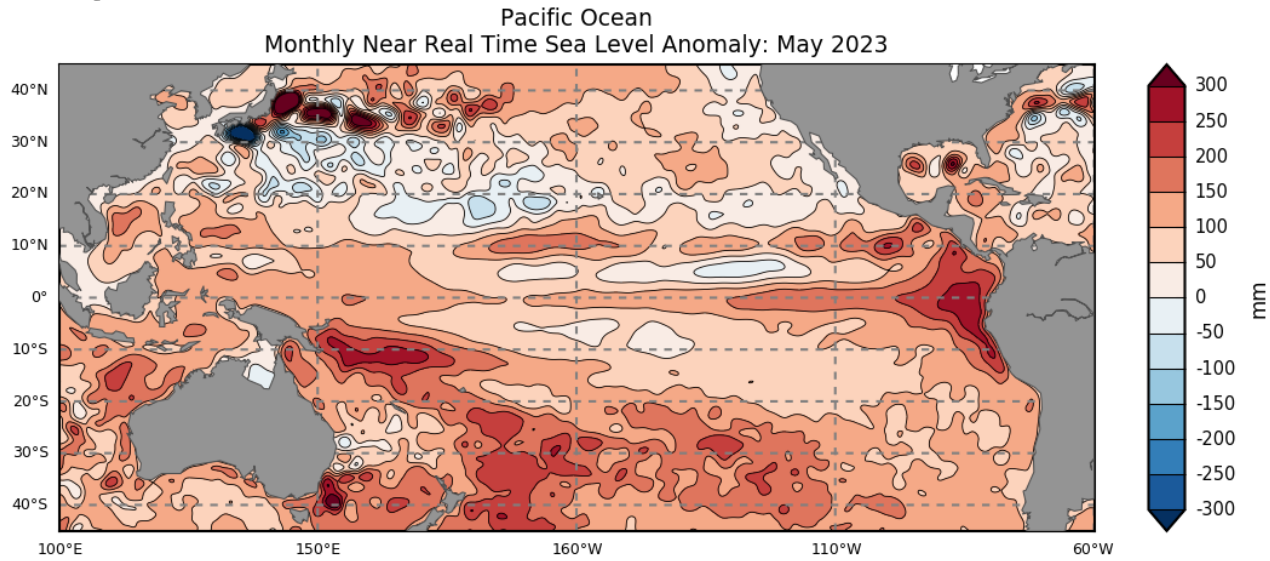
Weekly data for the week ending 11/06/2023

# Equatorial Pacific sub-surface profile

## Bureau of Meteorology

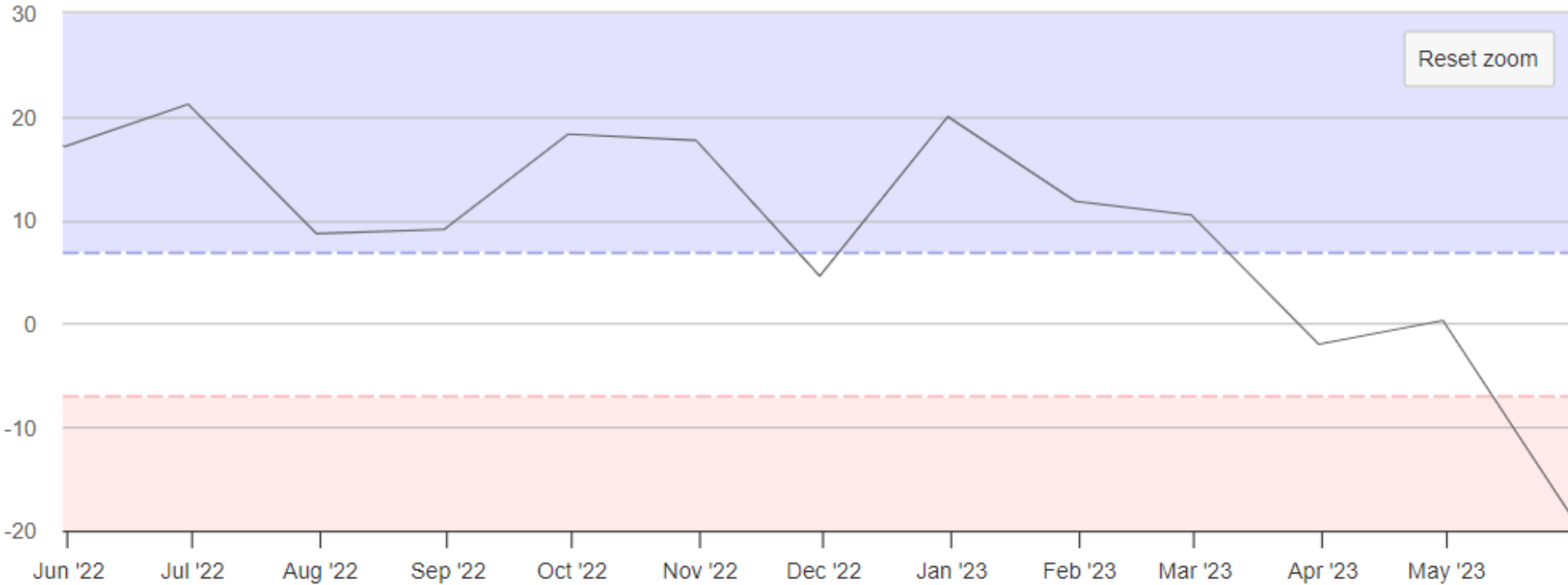


# May 2023 Sea Level Anomaly



# Southern Oscillation Index

Southern Oscillation Index - monthly

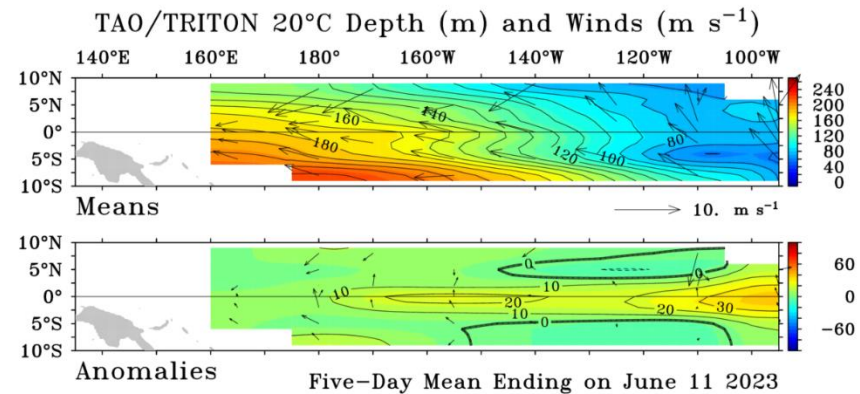
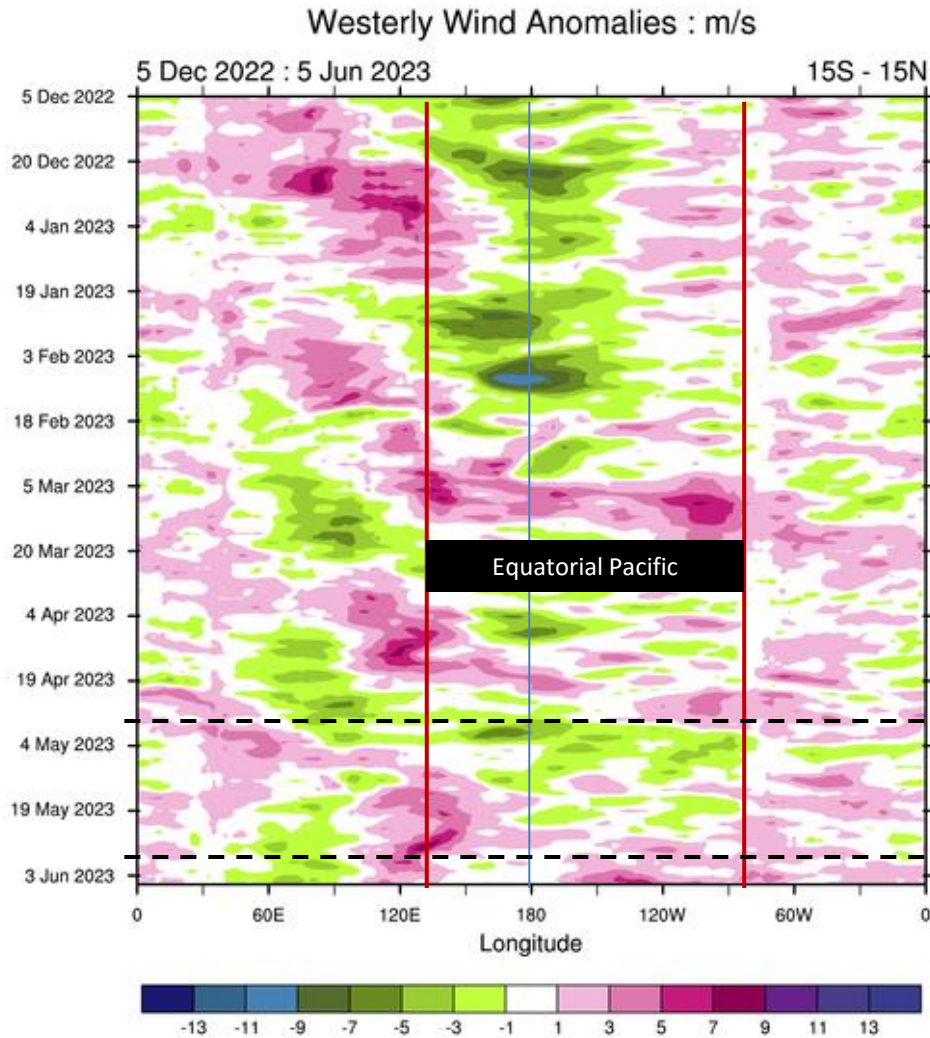


Southern Oscillation Index monthly data

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2023	+11.8	+10.5	-2.0	+0.3	-18.5	-	-	-	-	-	-	-
2022	+4.1	+8.2	+13.8	+22.6	+17.1	+21.2	+8.7	+9.1	+18.3	+17.7	+4.6	+20.0

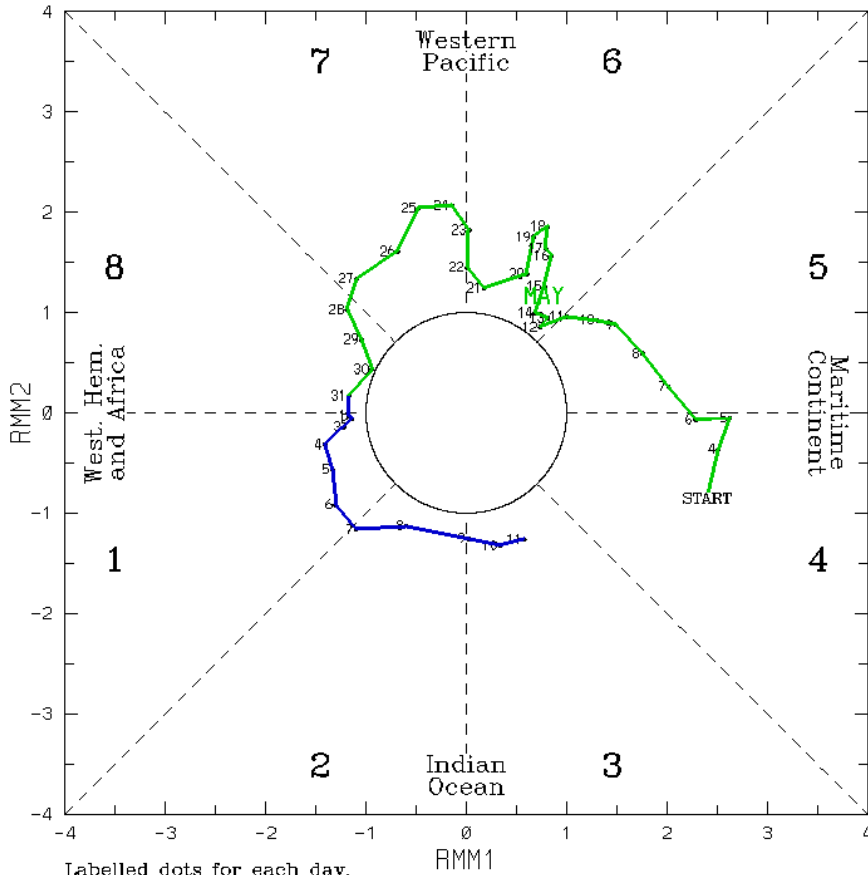
At 12 June 2023: 30-day SOI = -14; 90-day SOI = -7

# Equatorial Trade Winds



# Madden-Julian Oscillation

(RMM1,RMM2) phase space for 3-May-2023 to 11-Jun-2023

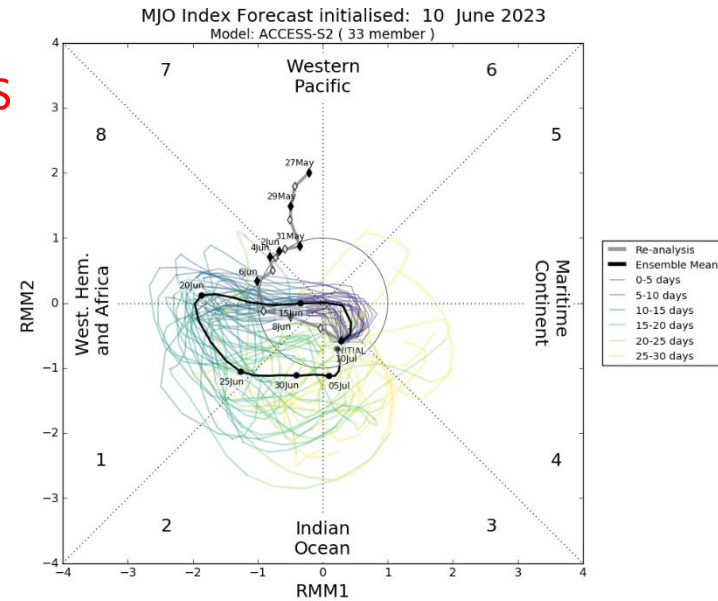


Labelled dots for each day.

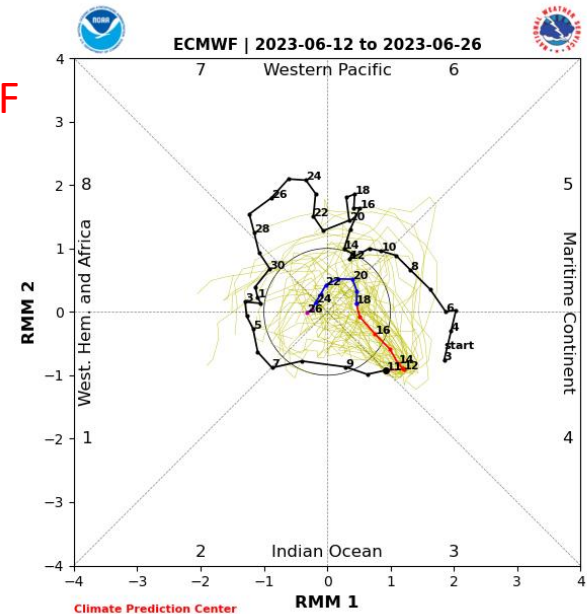
Blue line is for Jun, green line is for May, red line is for Apr.

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2023

ACCESS

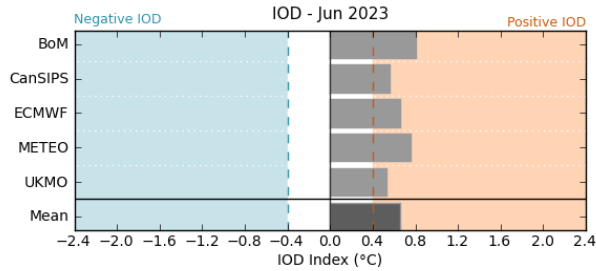


ECMWF

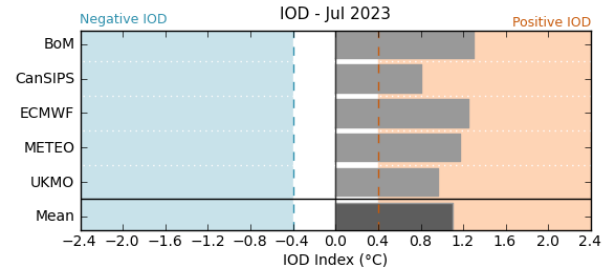


Climate Prediction Center

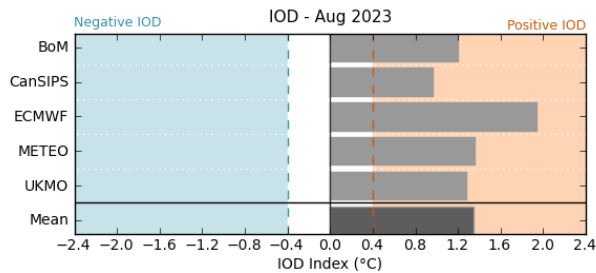
# Indian Ocean Dipole (IOD)



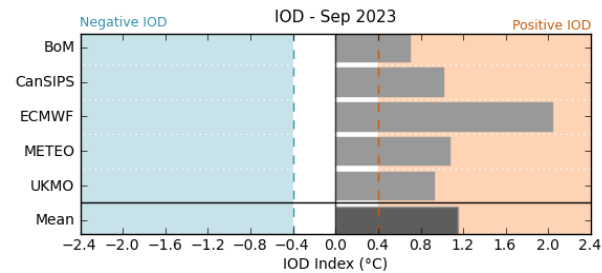
© Copyright Australian Bureau of Meteorology



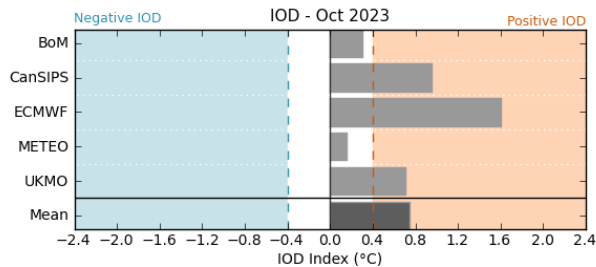
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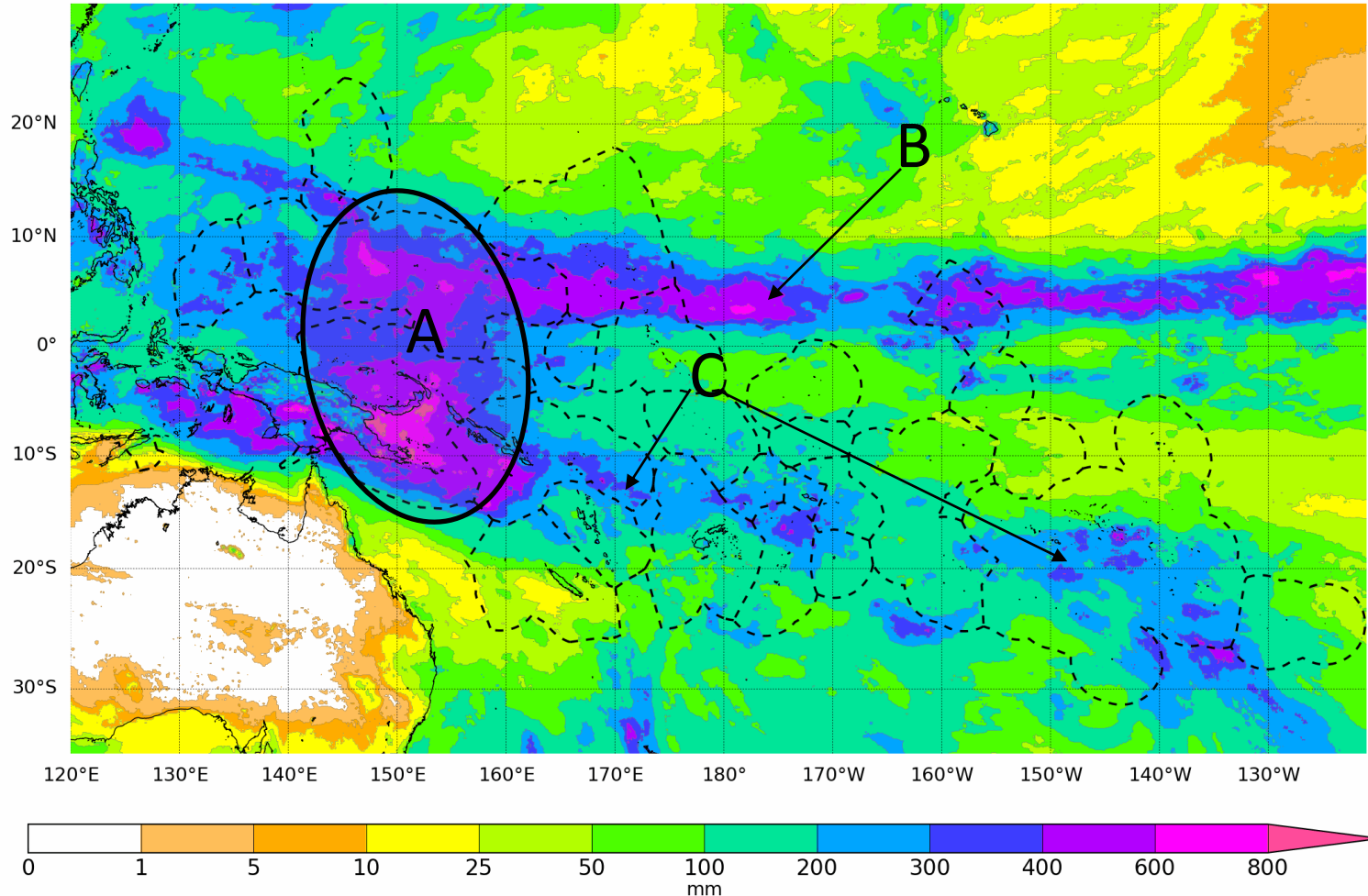
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# Satellite Rainfall May 2023

1-month total rainfall ending May 2023



Data source: MSWEP

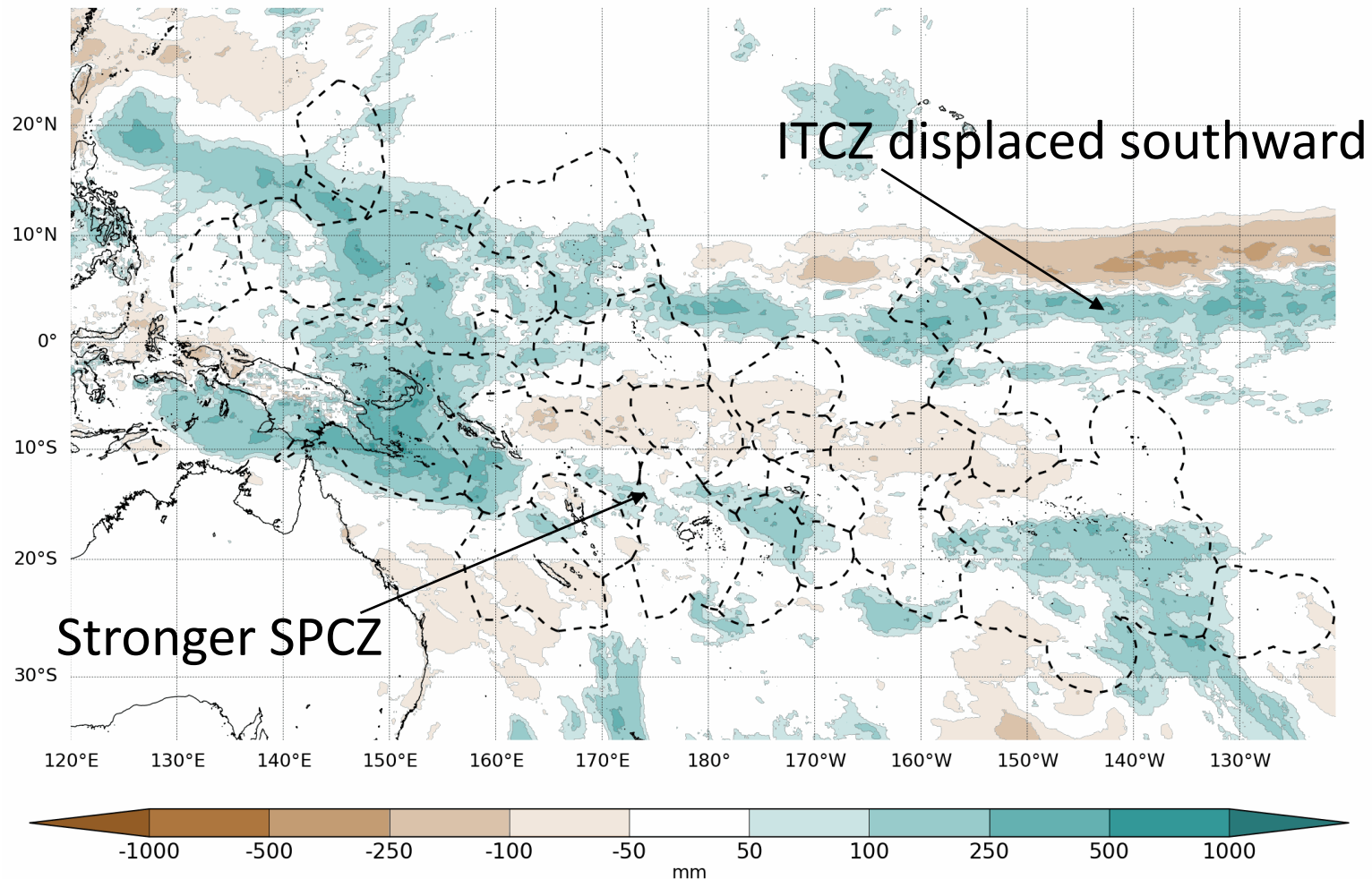
Run: 07/06/2023

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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 May 2023

1-month total rainfall anomaly ending May 2023



Data source: MSWEP

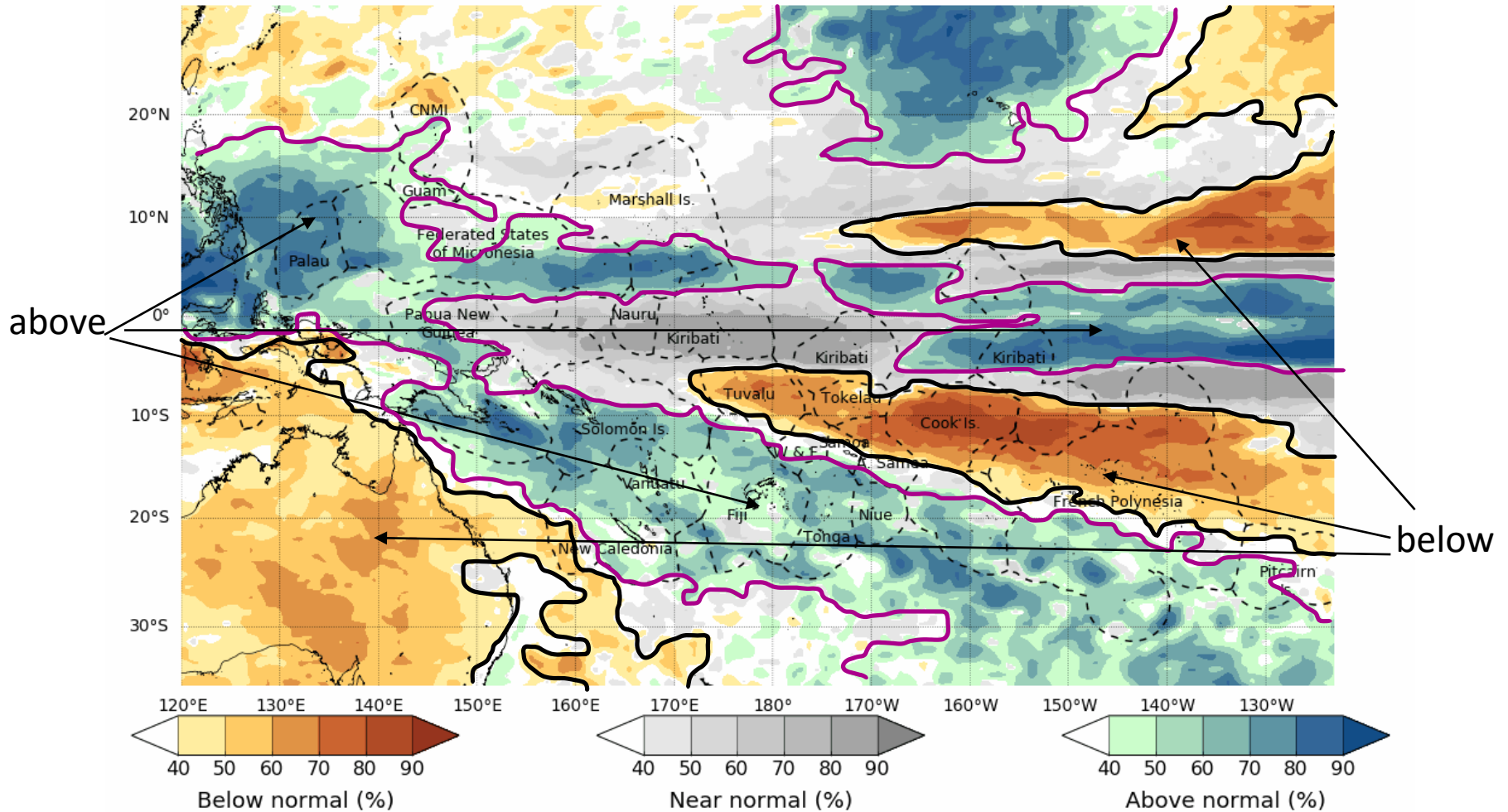
Run: 07/06/2023  
Base period: 1980-2021

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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: Mar-May

Tercile rainfall probabilities for  
March to May 2023



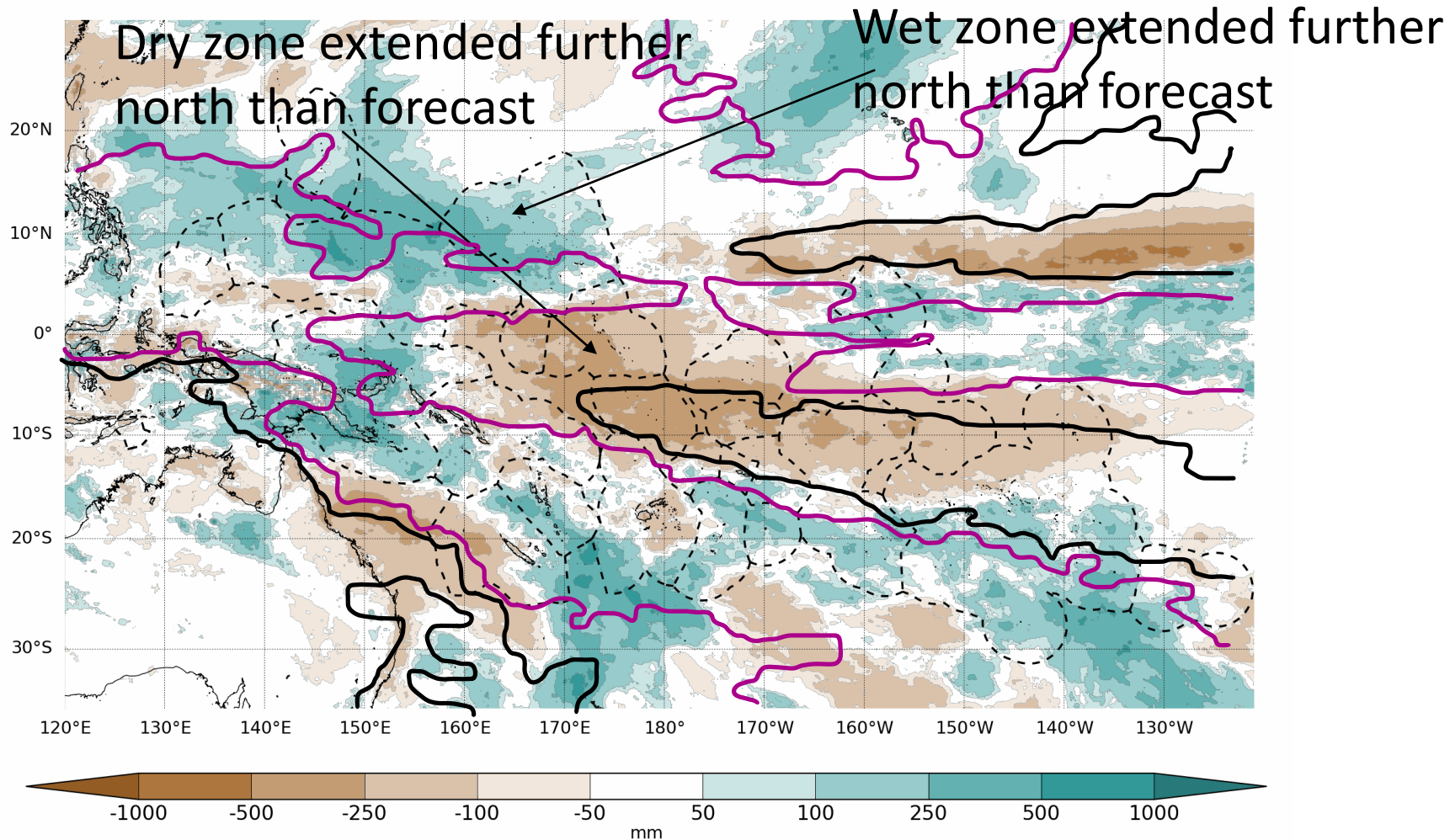
Base period: 1981-2018  
 Model: ACCESS-S2  
 © Commonwealth of Australia 2023, Australian Bureau of Meteorology

Model run: 27/02/2023  
 Issued: 02/03/2023

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: Mar-May

3-month total rainfall anomaly ending May 2023



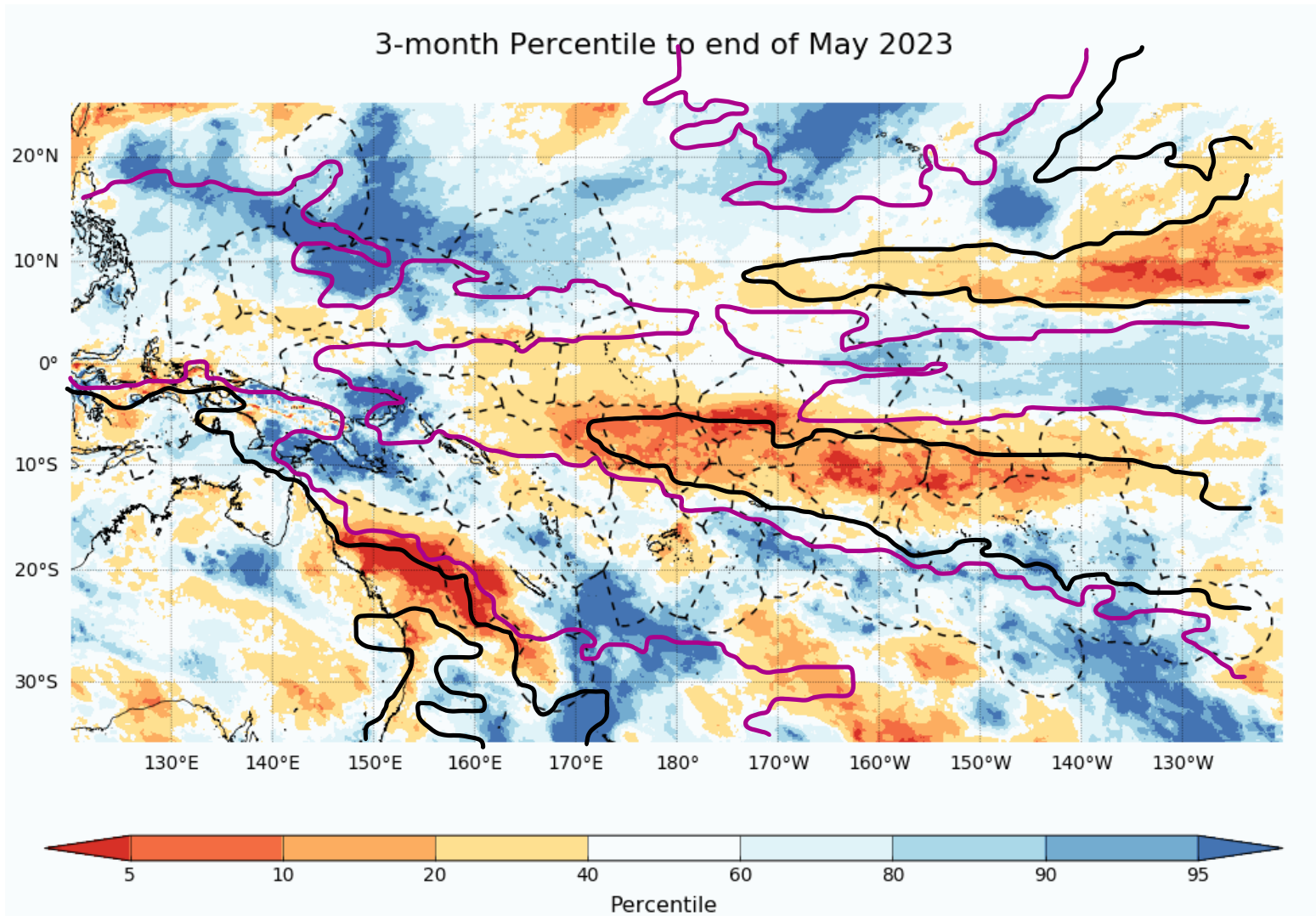
Data source: MSWEP

Run: 07/06/2023  
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: Mar-May



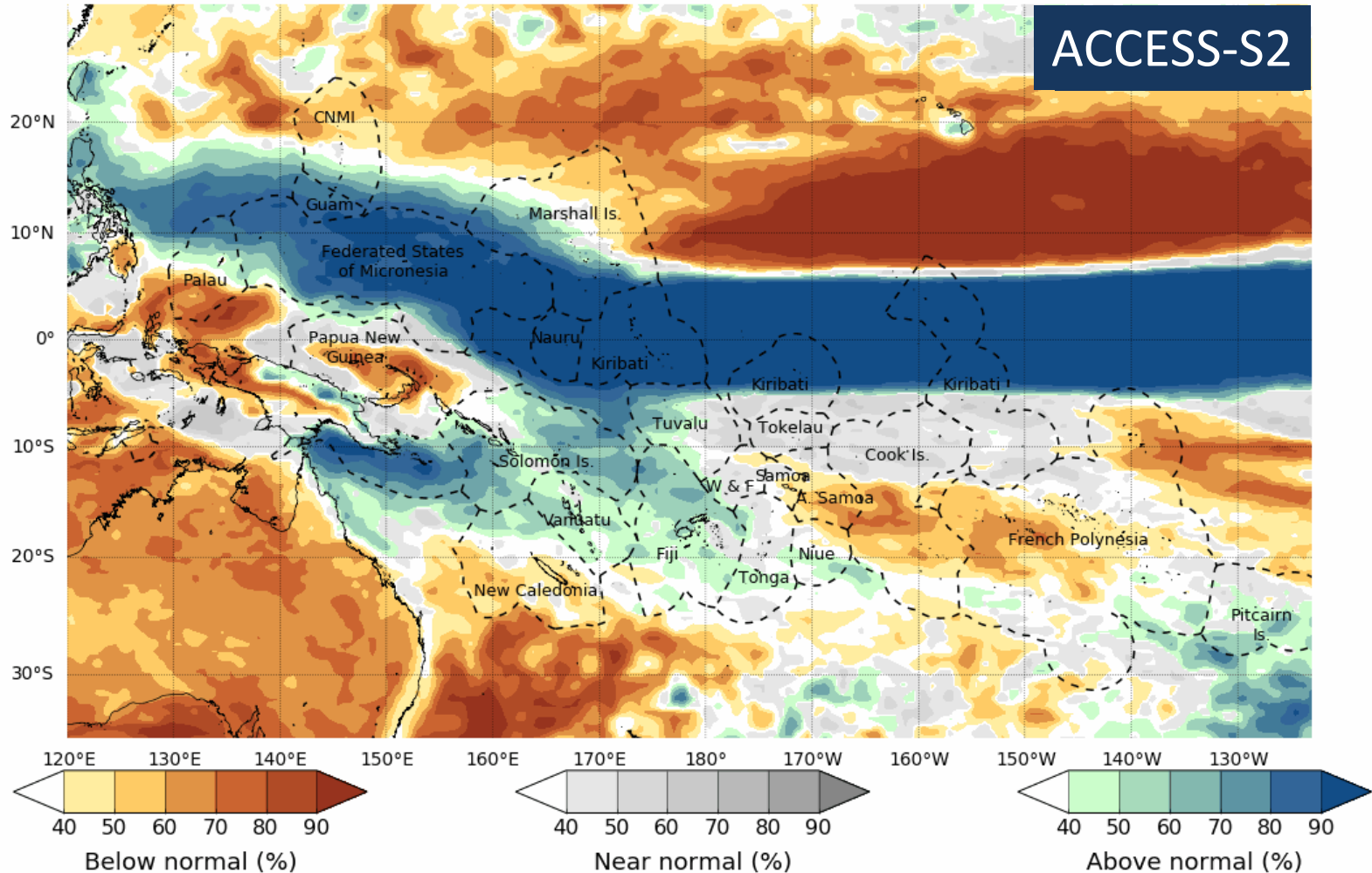
Data source: MSWEP

Issued: 07/06/2023  
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

# Model Rainfall Predictions (JJA)

Tercile rainfall probabilities for  
June to August 2023



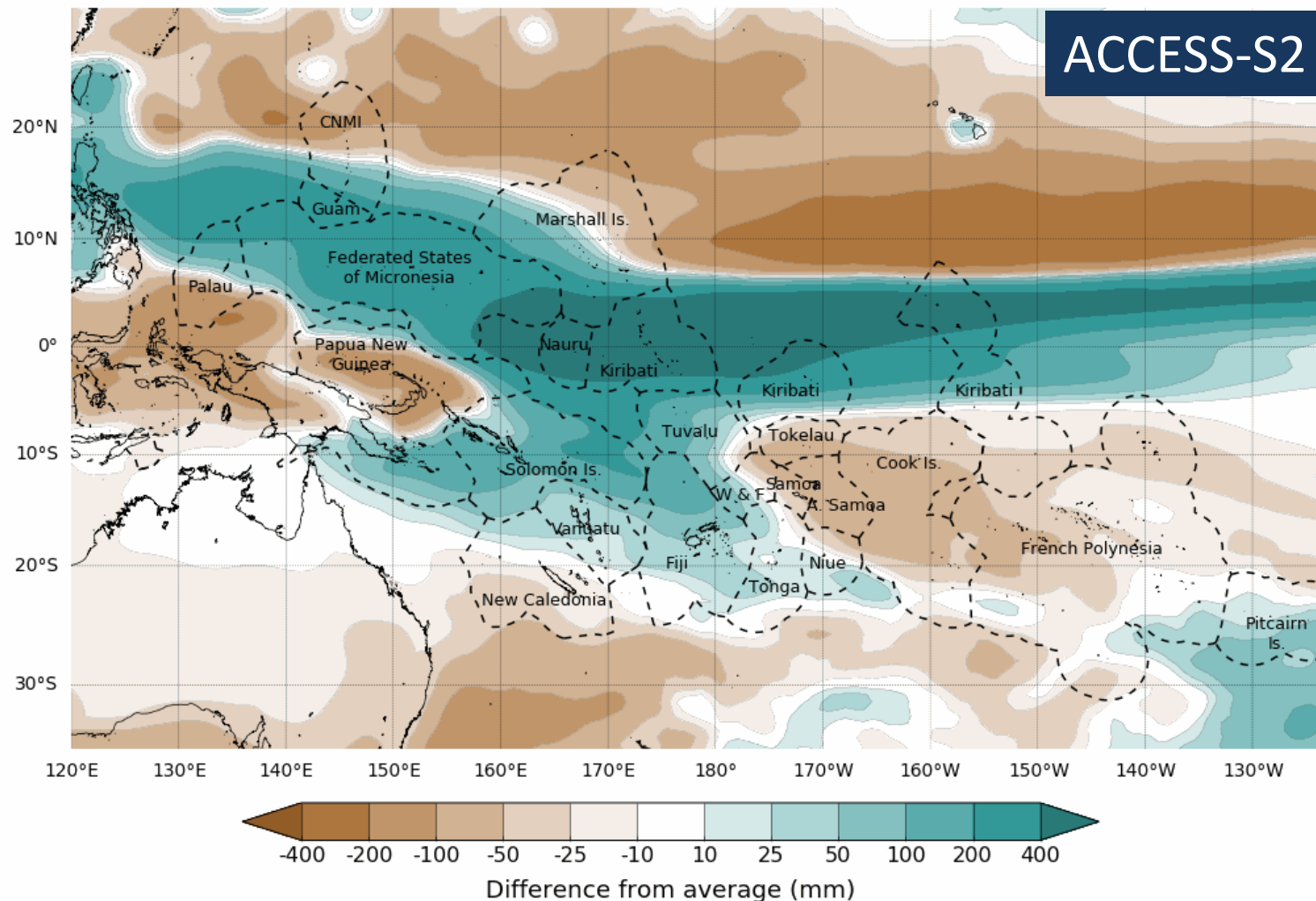
Base period: 1981-2018  
Model: ACCESS-S2  
© Commonwealth of Australia 2023, Australian Bureau of Meteorology

Model run: 29/05/2023  
Issued: 01/06/2023

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.marinerregions.org/>.

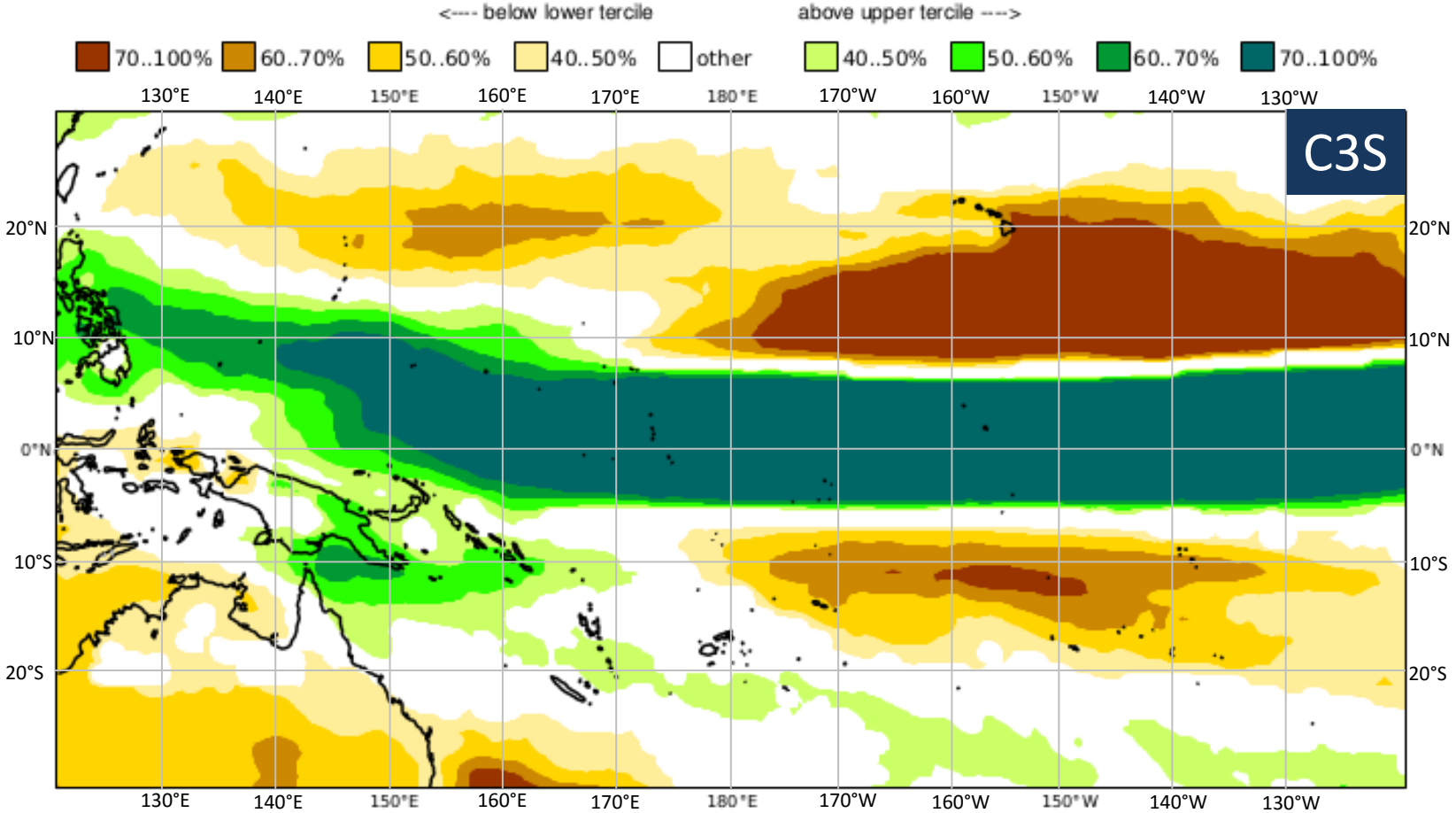
# Difference from Average (JJA)

Difference from average rainfall forecast for  
June to August 2023

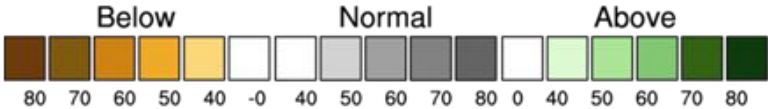
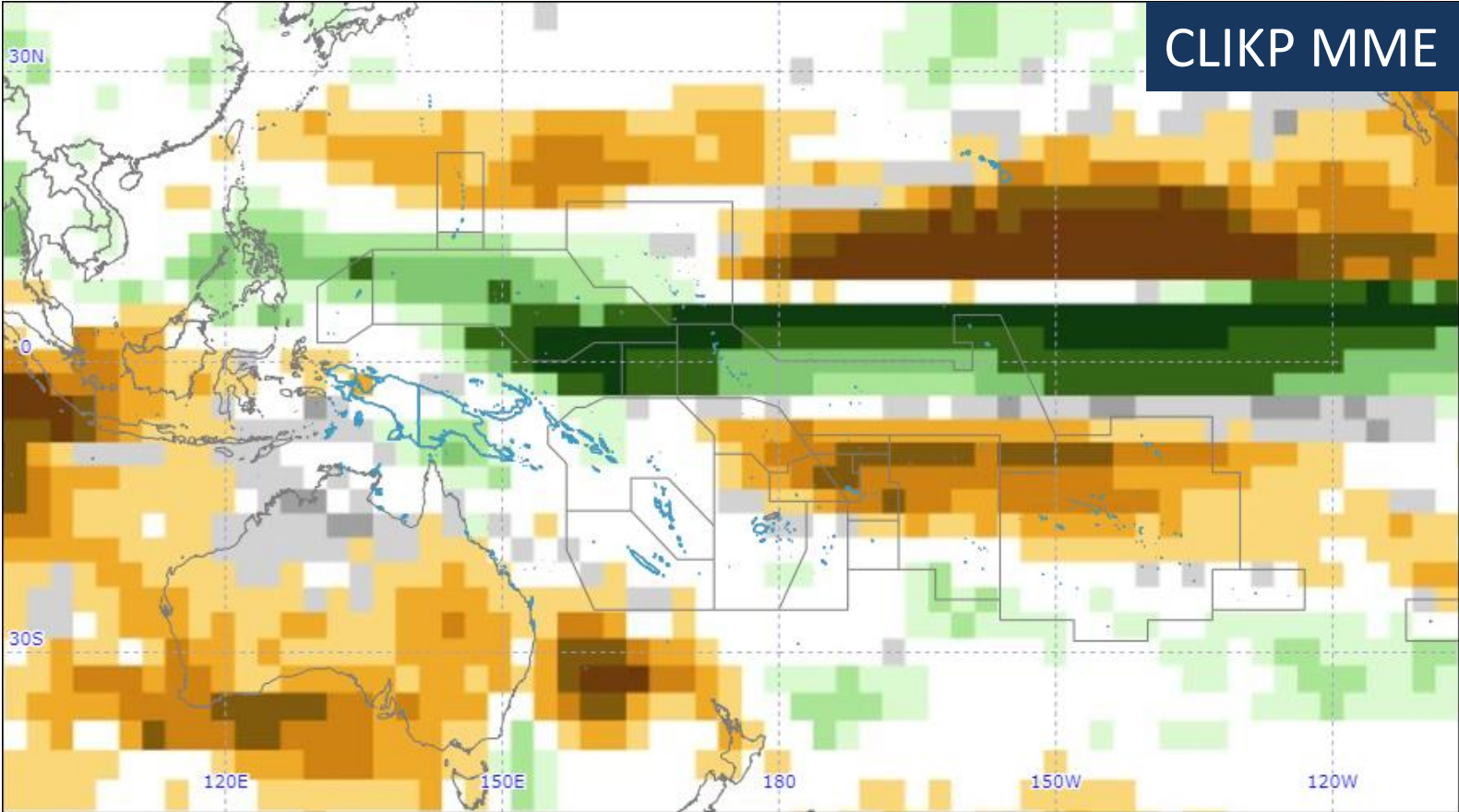


# Model Rainfall Predictions (JJA)

C3S multi-system seasonal forecast    ECMWF/Met Office/Météo-France/CMCC/DWD/NCEP/JMA/ECCC  
Prob(most likely category of precipitation)    JJA 2023  
Nominal forecast start: 01/05/23  
Unweighted mean



# Model Rainfall Predictions (JJA)



Year: 2023, Season: JJA, Lead Month: 3, Method: GAUS

Model: APCC, CMCC, MSC, NASA, NCEP

Generated using CLIK® (2023-6-9)

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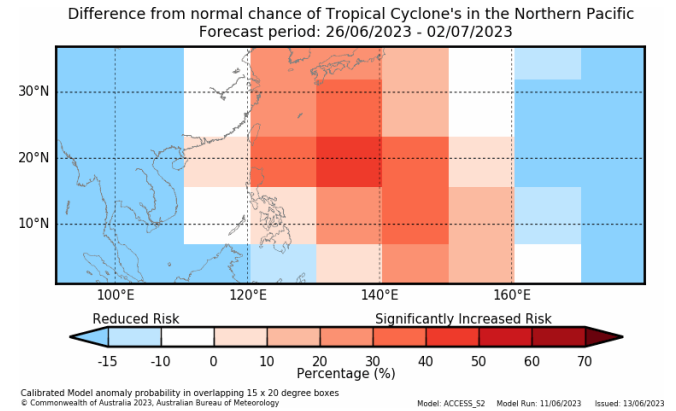
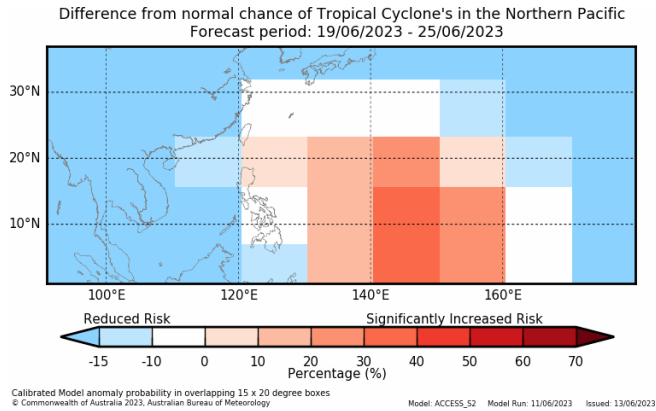
# Model Rainfall Predictions (JJA)

June to August 2023			
	ACCESS-S	C3S	CLIKP
Cook Is North			
Cook Is South			
Fiji West			
Fiji Central			
Fiji East			
Fiji North			
Fiji Rotuma			
FSM West			
FSM Central			
FSM East			
Kiribati West			
Kiribati Central			
Kiribati East			
RMI North			
RMI Central			
RMI South			
Nauru			
Niue			
Palau			
PNG Momase			
PNG Is			
PNG South			
PNG Highlands			
Samoa			
Solomon Is West			
Solomon Is Central			
Solomon Is East			
Tonga North			
Tonga Central			
Tonga South			
Tuvalu North			
Tuvalu Central			
Tuvalu South			
Vanuatu North			
Vanuatu South			

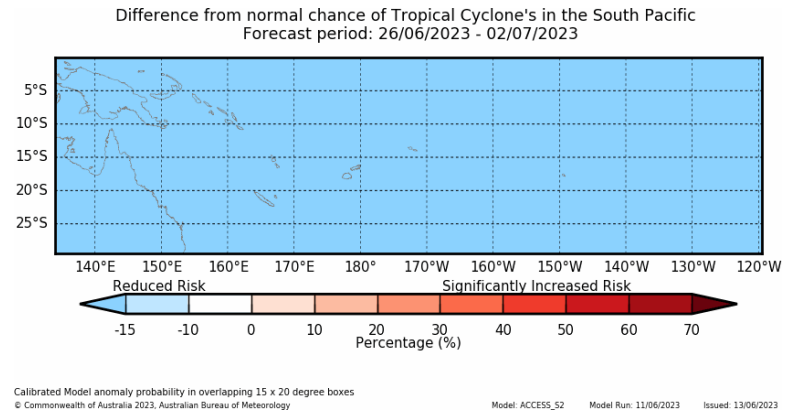
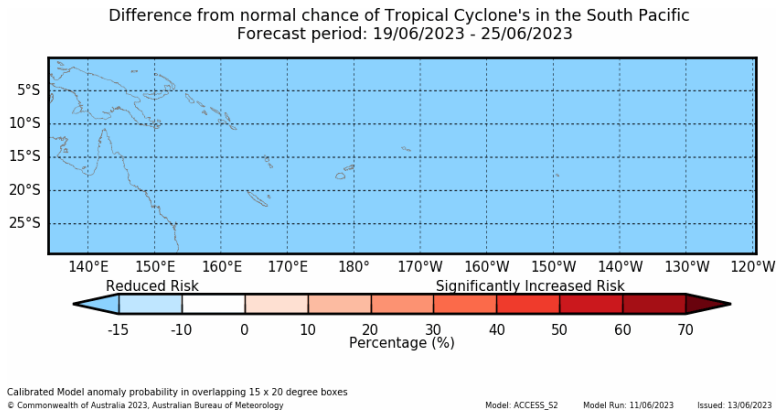
	41-50%	51-60%	61-70%	71-80%	81-90%	>90%
Below normal						
Near-normal						
Above normal						

# TC Outlooks

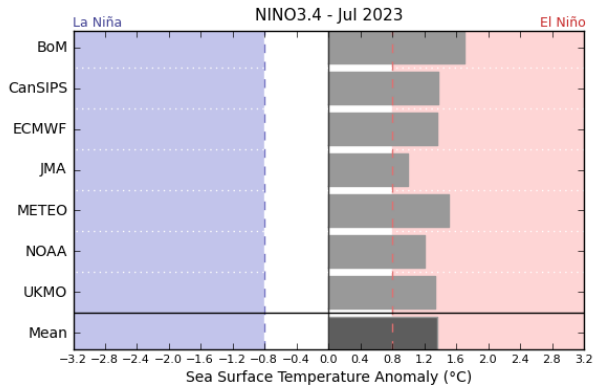
## Northwest Pacific



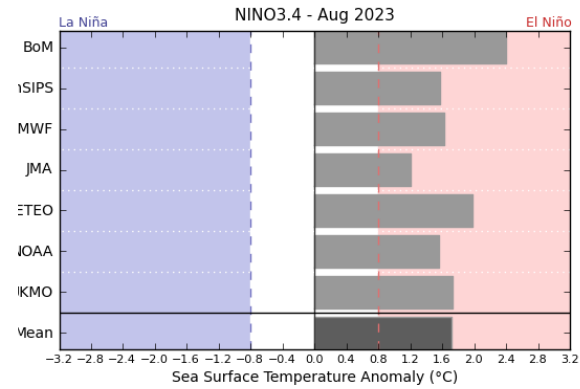
## South Pacific



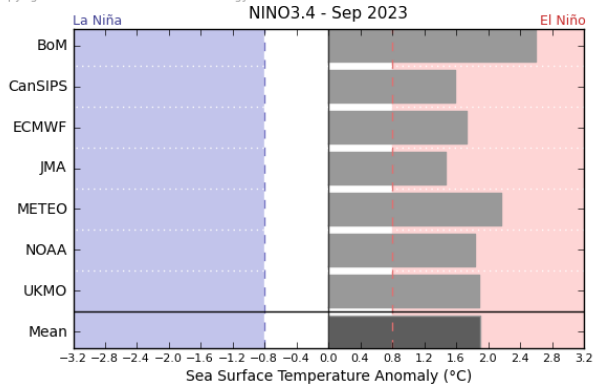
# Climate Model Summary



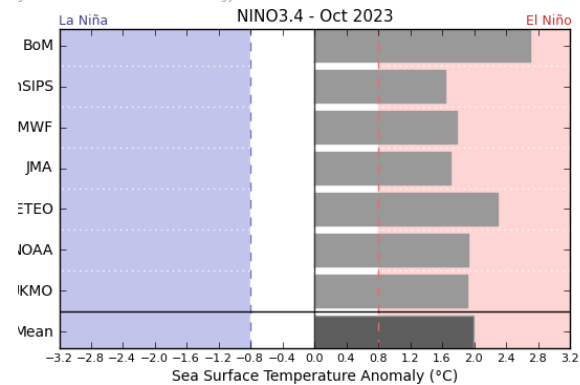
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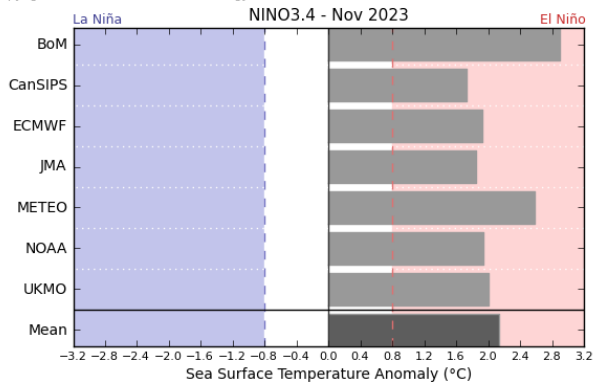
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# IRI Climate Model Summary

