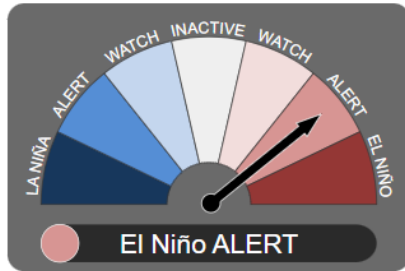


# ENSO update - OCOF 192

15 September 2023

# ENSO Update

## Positive IOD very likely to emerge; El Niño Alert continues

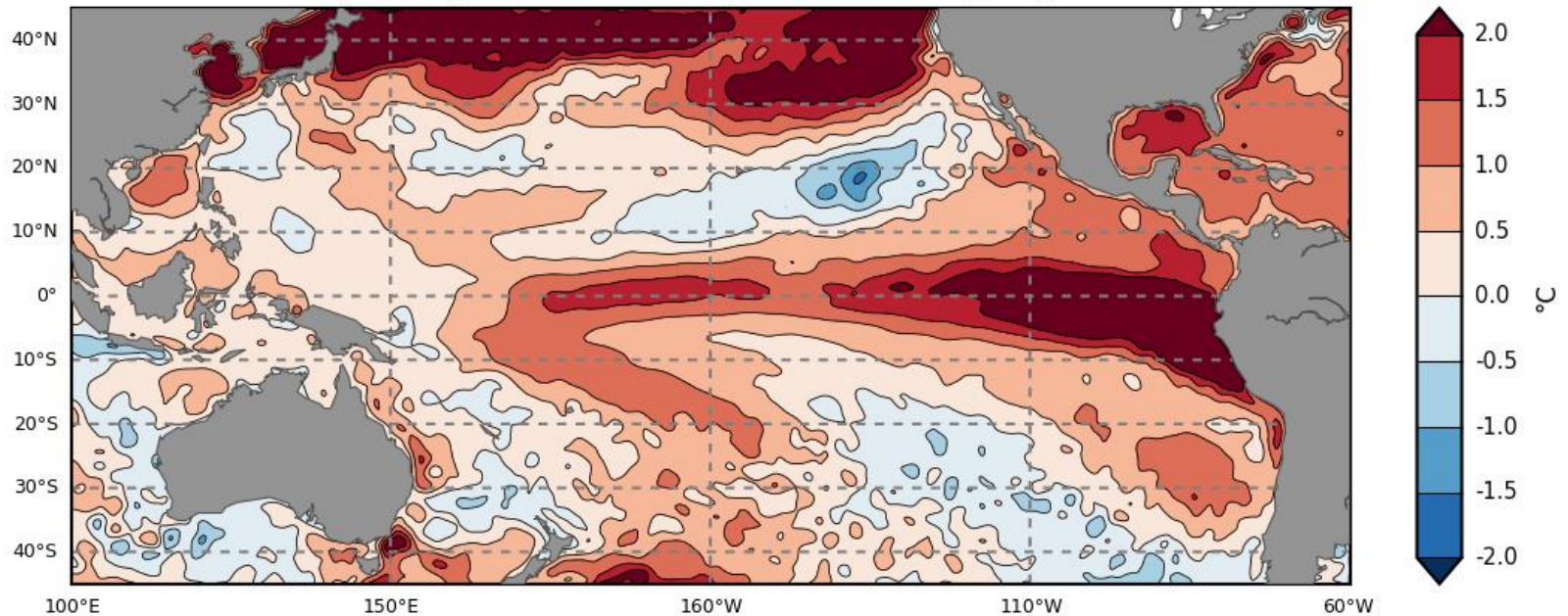


- The Bureau's El Niño Alert continues, with El Niño development likely during spring. When El Niño Alert criteria have been met in the past, an El Niño event has developed around 70% of the time.
- Sea surface temperatures (SSTs) in the tropical Pacific are exceeding El Niño thresholds, with climate models indicating this is likely to continue at least through to early 2024.
- The 90-day Southern Oscillation Index (SOI) is currently -7, exceeding El Niño thresholds. Trade winds for August 2023 were slightly weaker than average across the Pacific for the first time since January 2020. Other atmospheric indicators have also recently shown signs of possible coupling between the Pacific Ocean and the atmosphere. This coupling is a characteristic of an El Niño event and is what strengthens and sustains an event for an extended period. El Niño typically leads to reduced spring rainfall for eastern Australia.

# August 2023 SSTs

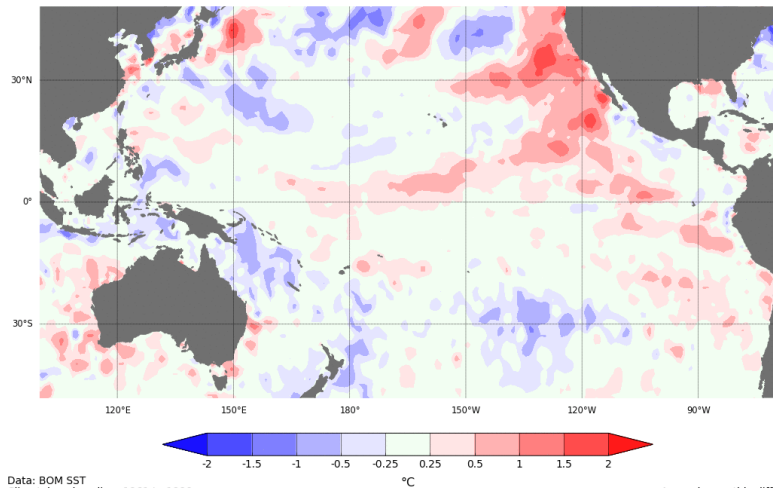
Pacific Ocean

Monthly Average Sea Surface Temperature Anomaly: August 2023



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Australian Bureau of Meteorology, COSPPac

Change in the monthly SST anomaly: August-2023 - July-2023

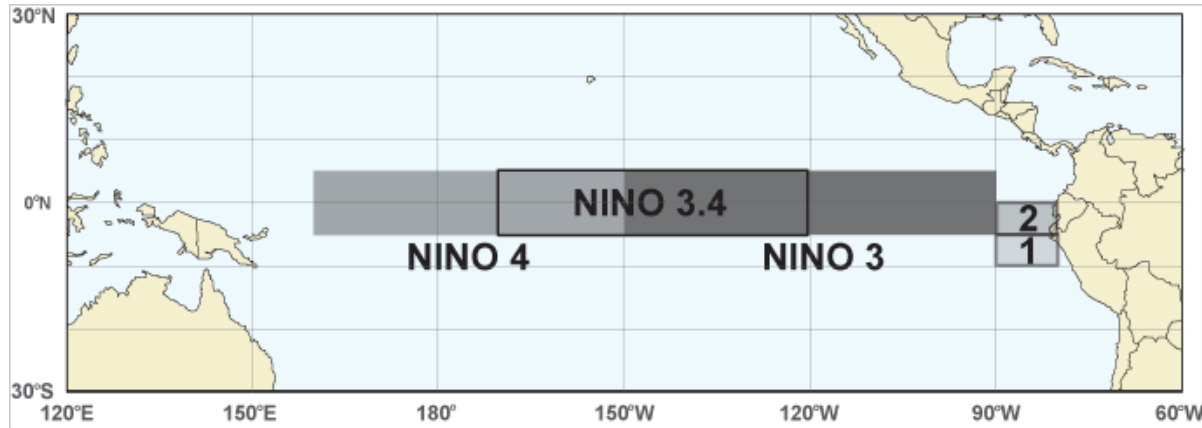


Data: BOM SST  
Climatology baseline: 1961 to 1990  
© Commonwealth of Australia 2023, Australian Bureau of Meteorology

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

Anomaly monthly difference  
Created: 11/09/2023

# NINO INDICES SST anomalies (°C)

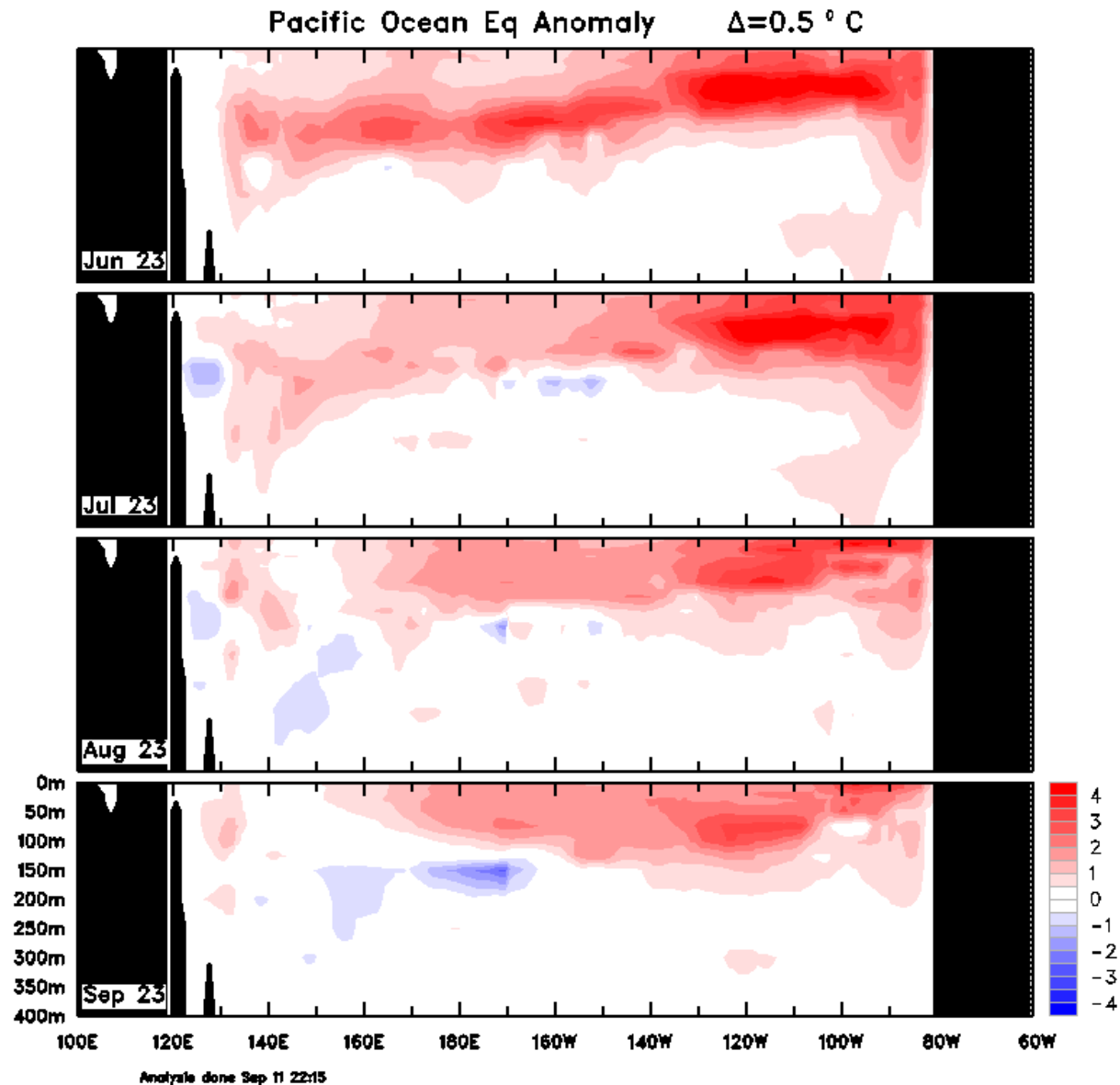


Index	July 2023	August 2023	Latest weekly
NINO3	+1.6	+1.9	+1.9
NINO3.4	+1.0	+1.2	+1.4
NINO4	+0.7	+1.0	+1.1

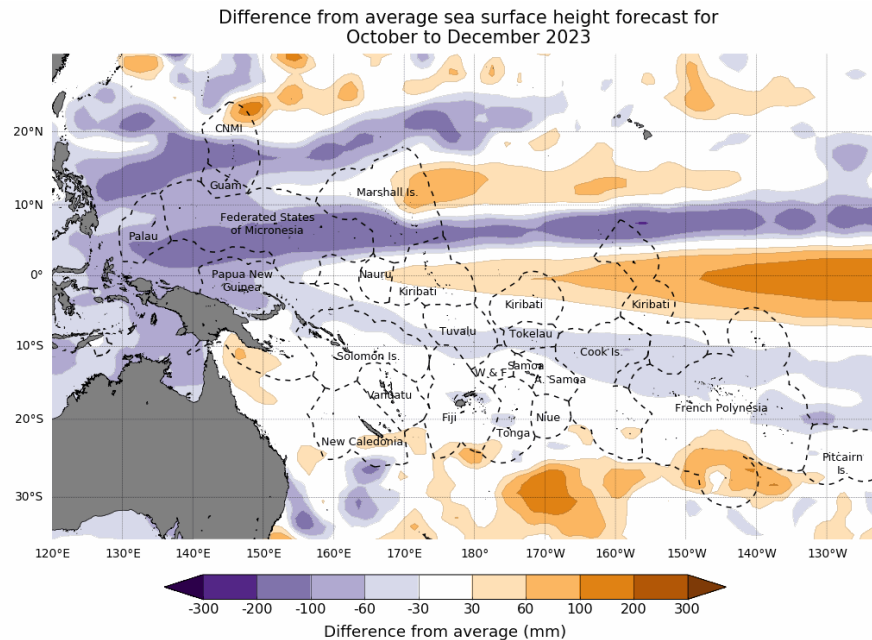
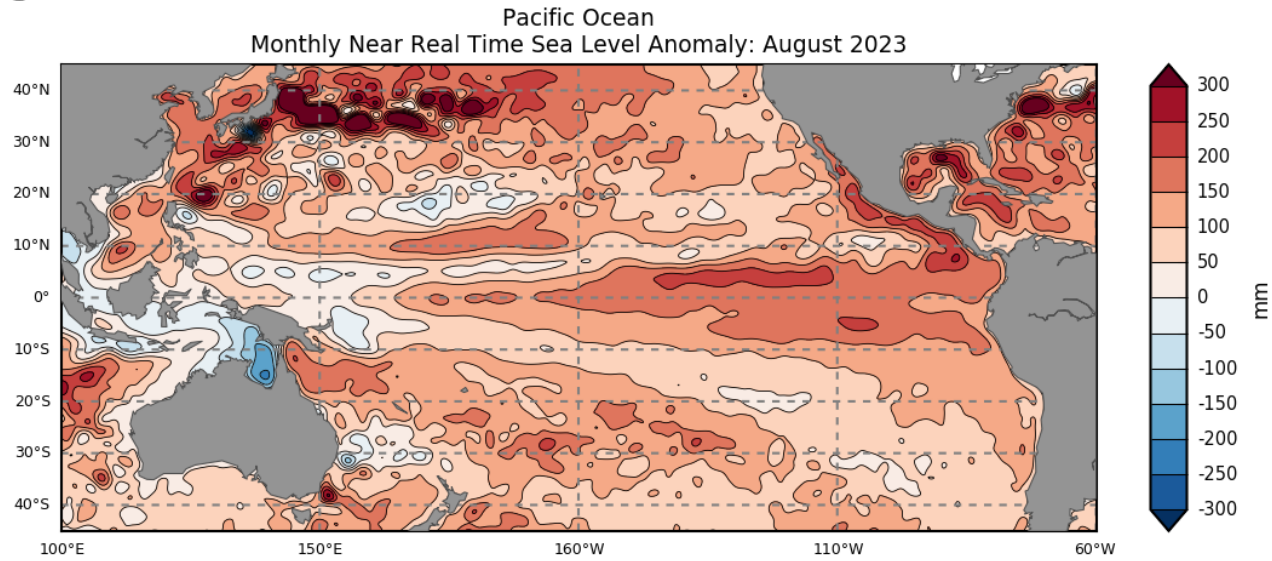
Weekly data for the week ending 10/09/2023

# Equatorial Pacific sub-surface profile

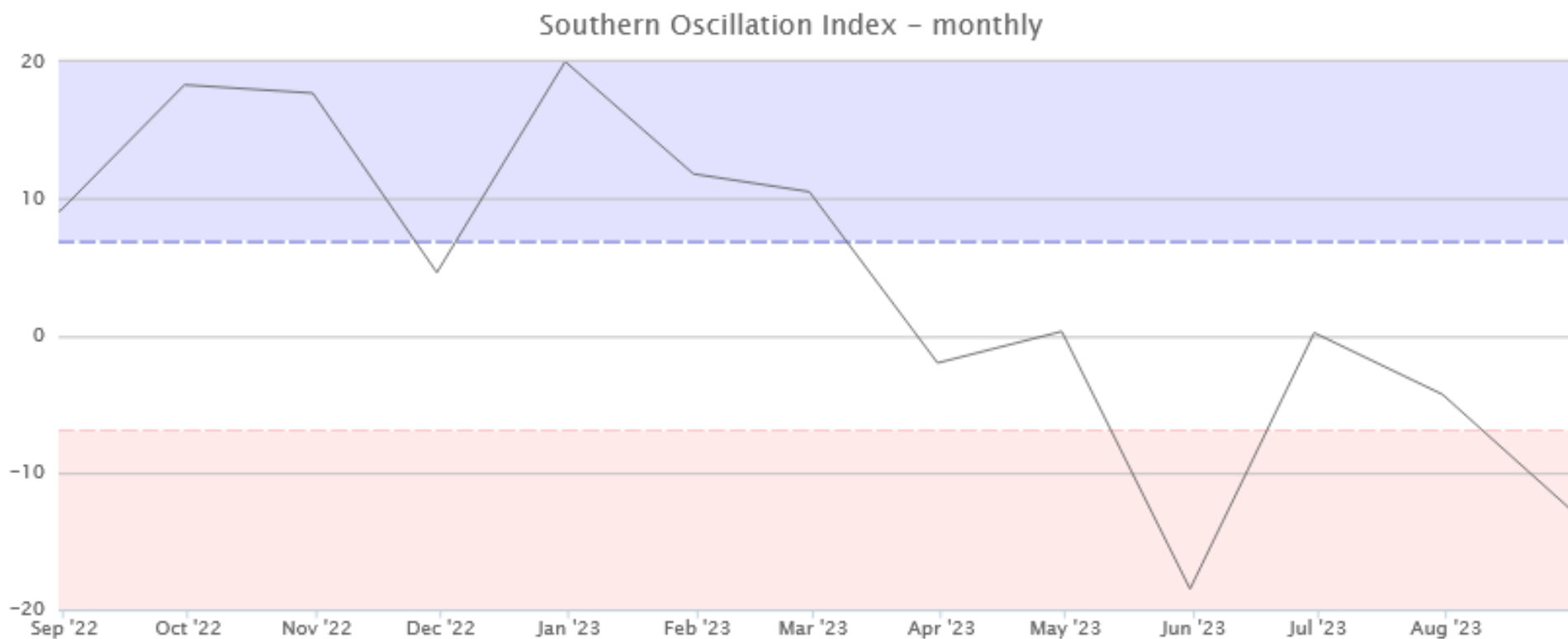
## Bureau of Meteorology



# August 2023 Sea Level Anomaly



# Southern Oscillation Index

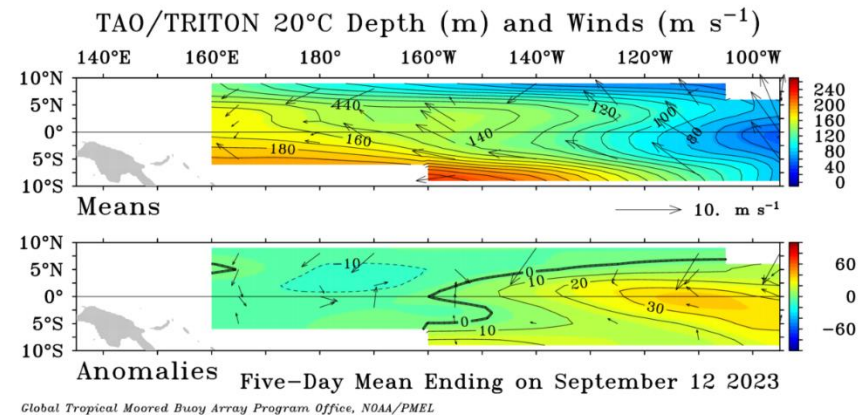
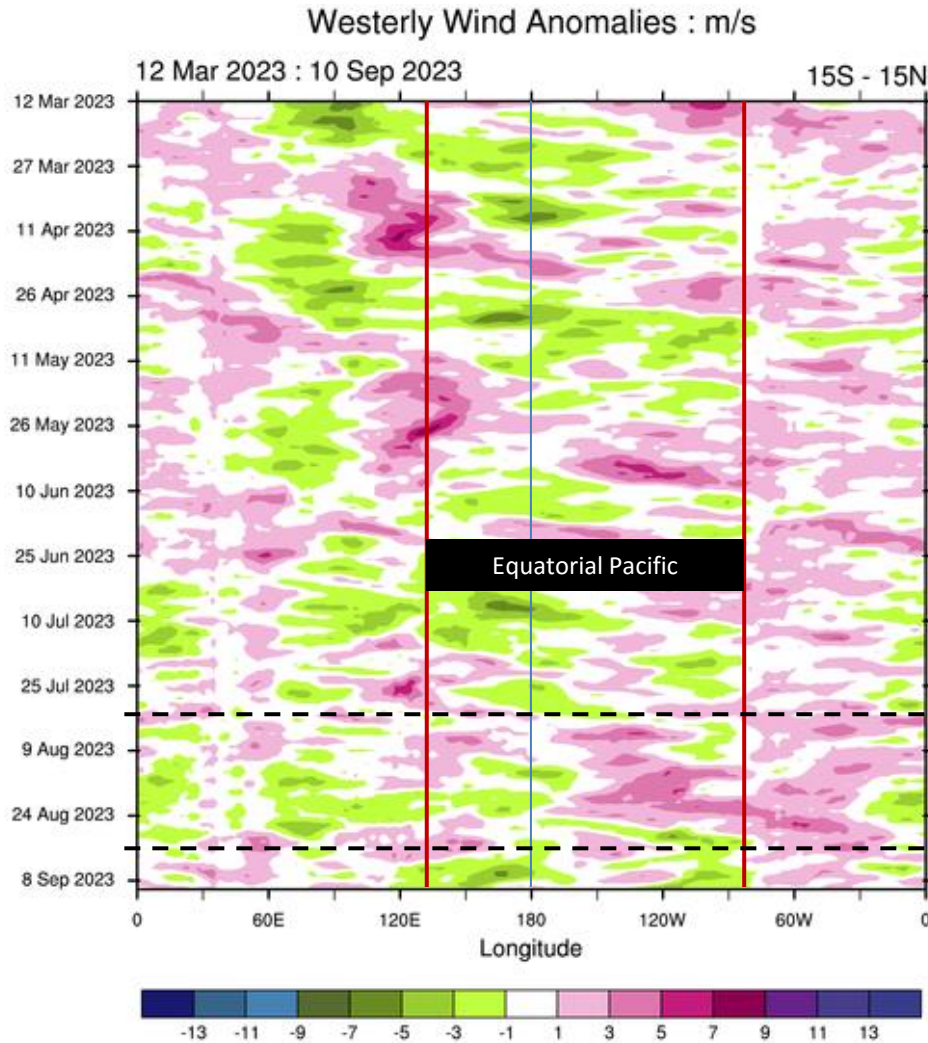


Southern Oscillation Index monthly data												
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2023	+11.8	+10.5	-2.0	+0.3	-18.5	+0.2	-4.3	-12.7	-	-	-	-
2022	+4.1	+8.2	+13.8	+22.6	+17.1	+21.2	+8.7	+9.1	+18.3	+17.7	+4.6	+20.0

At 12 September 2023: 30-day SOI = -13; 90-day SOI = -8



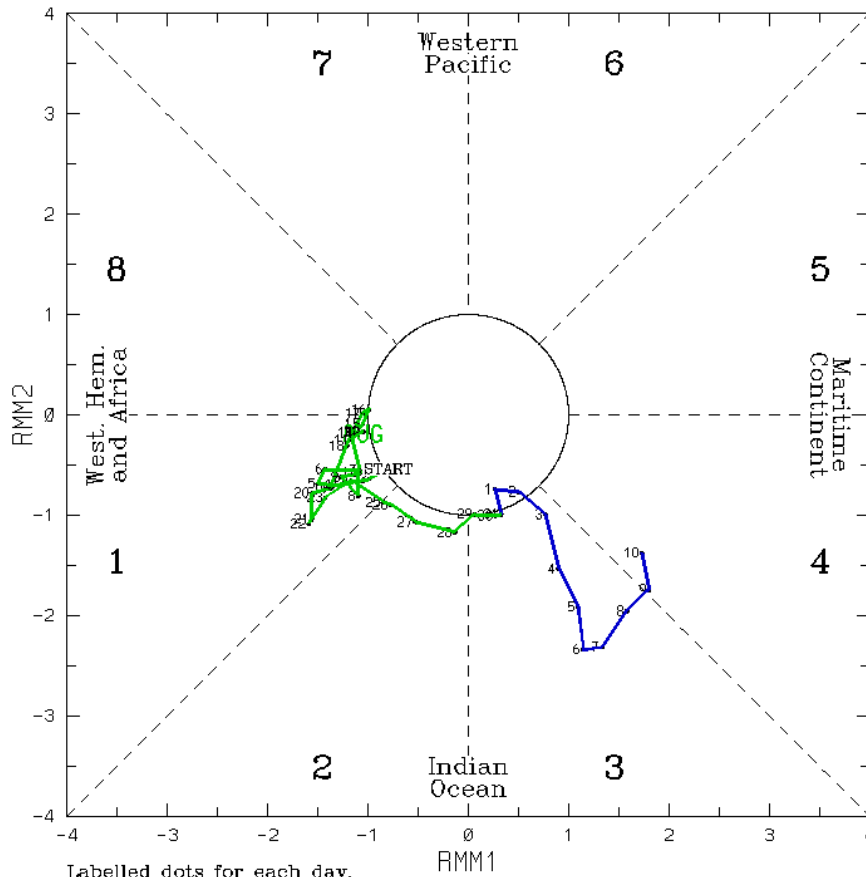
# Equatorial Trade Winds





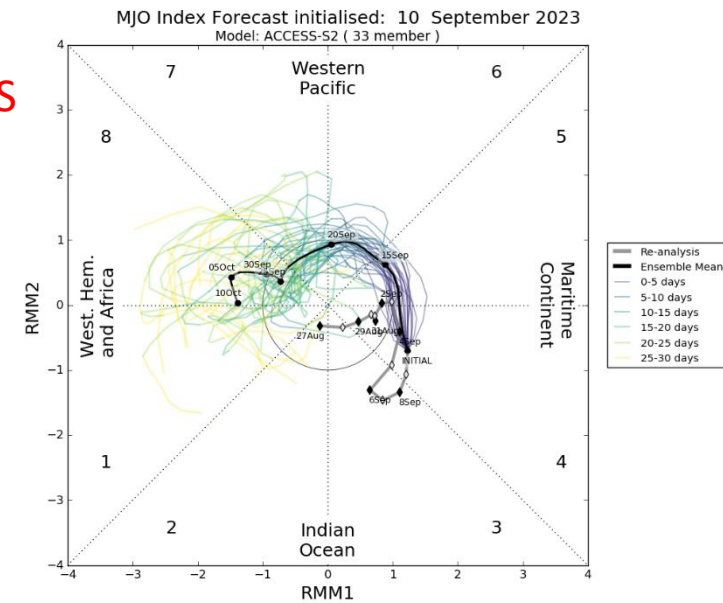
# Madden-Julian Oscillation

(RMM1, RMM2) phase space for 2-Aug-2023 to 10-Sep-2023

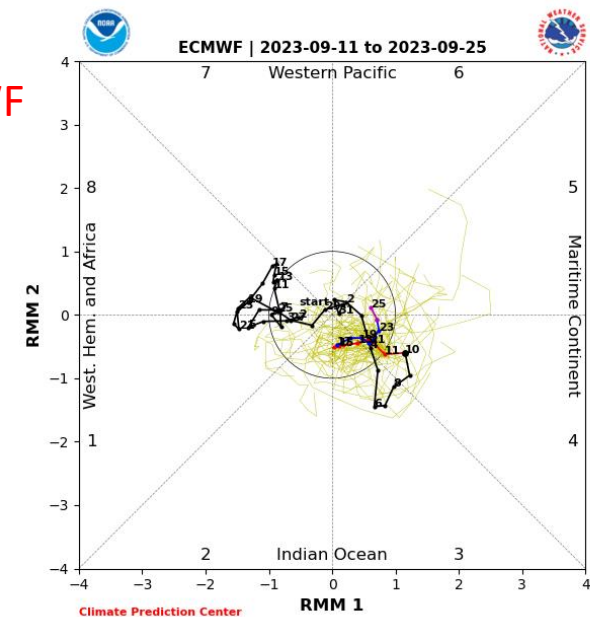


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2023

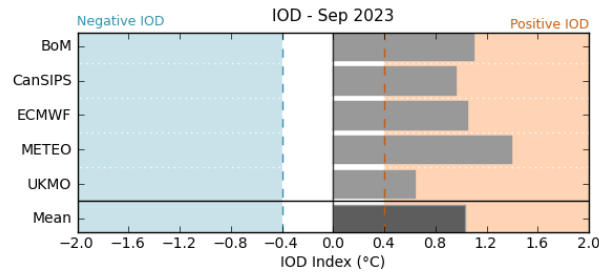
ACCESS



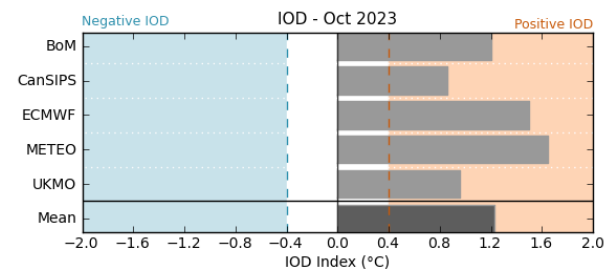
ECMWF



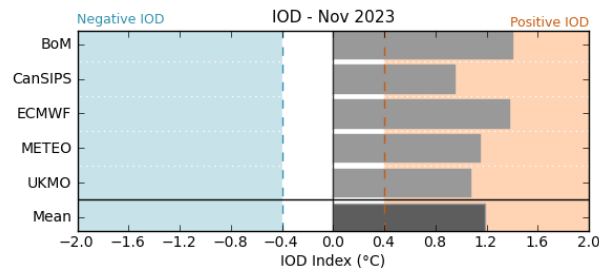
# Indian Ocean Dipole (IOD)



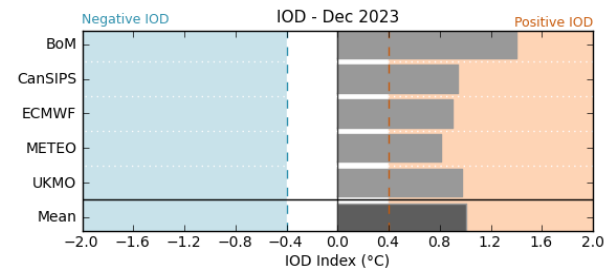
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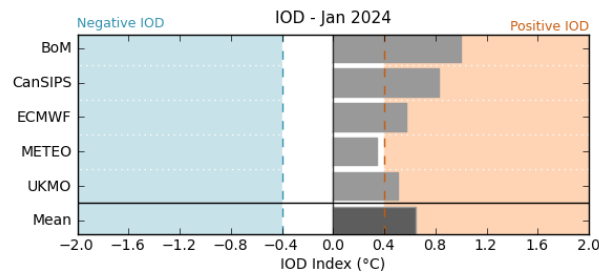
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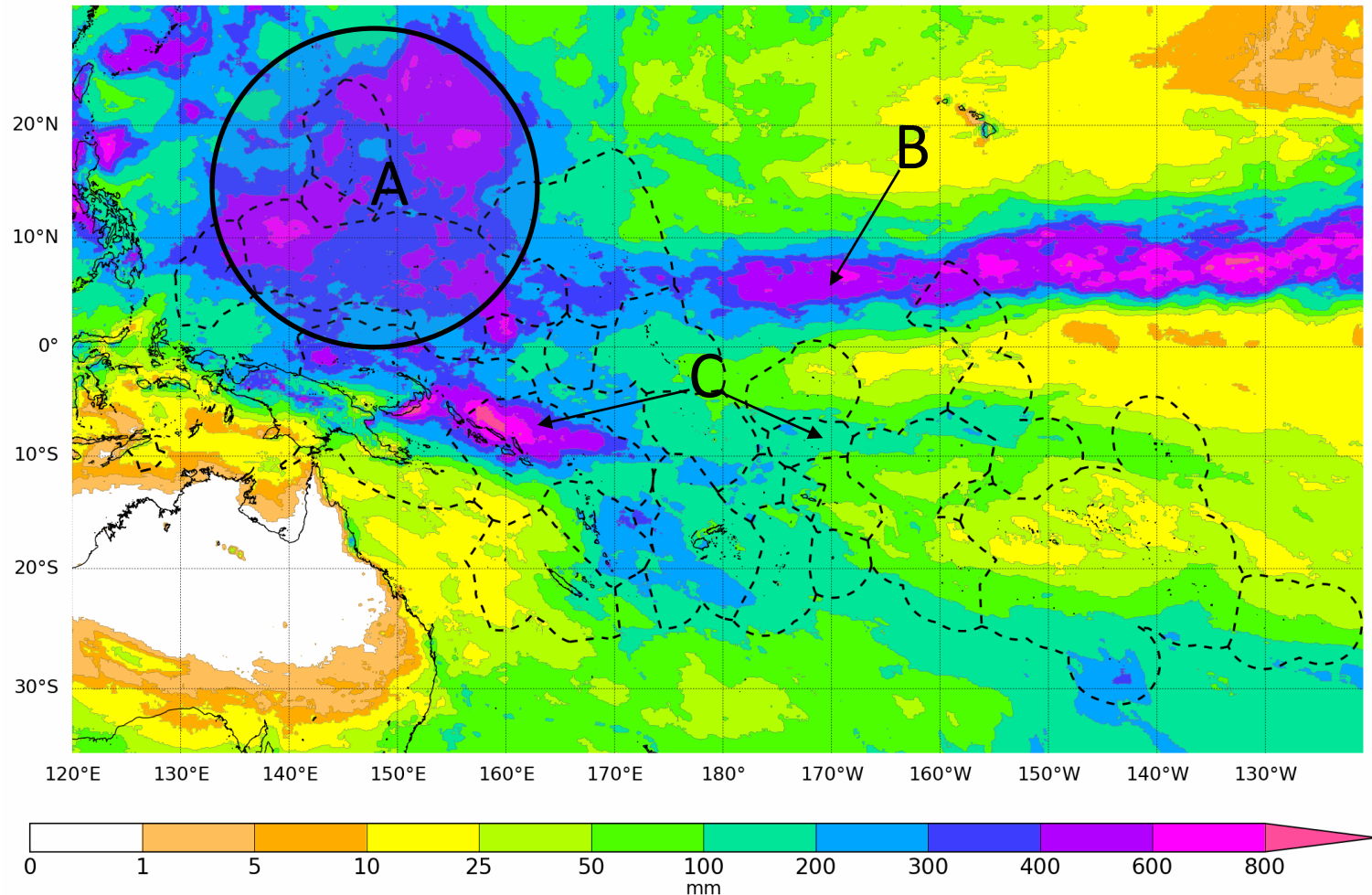
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# Satellite Rainfall August 2023

1-month total rainfall ending August 2023



Data source: MSWEP

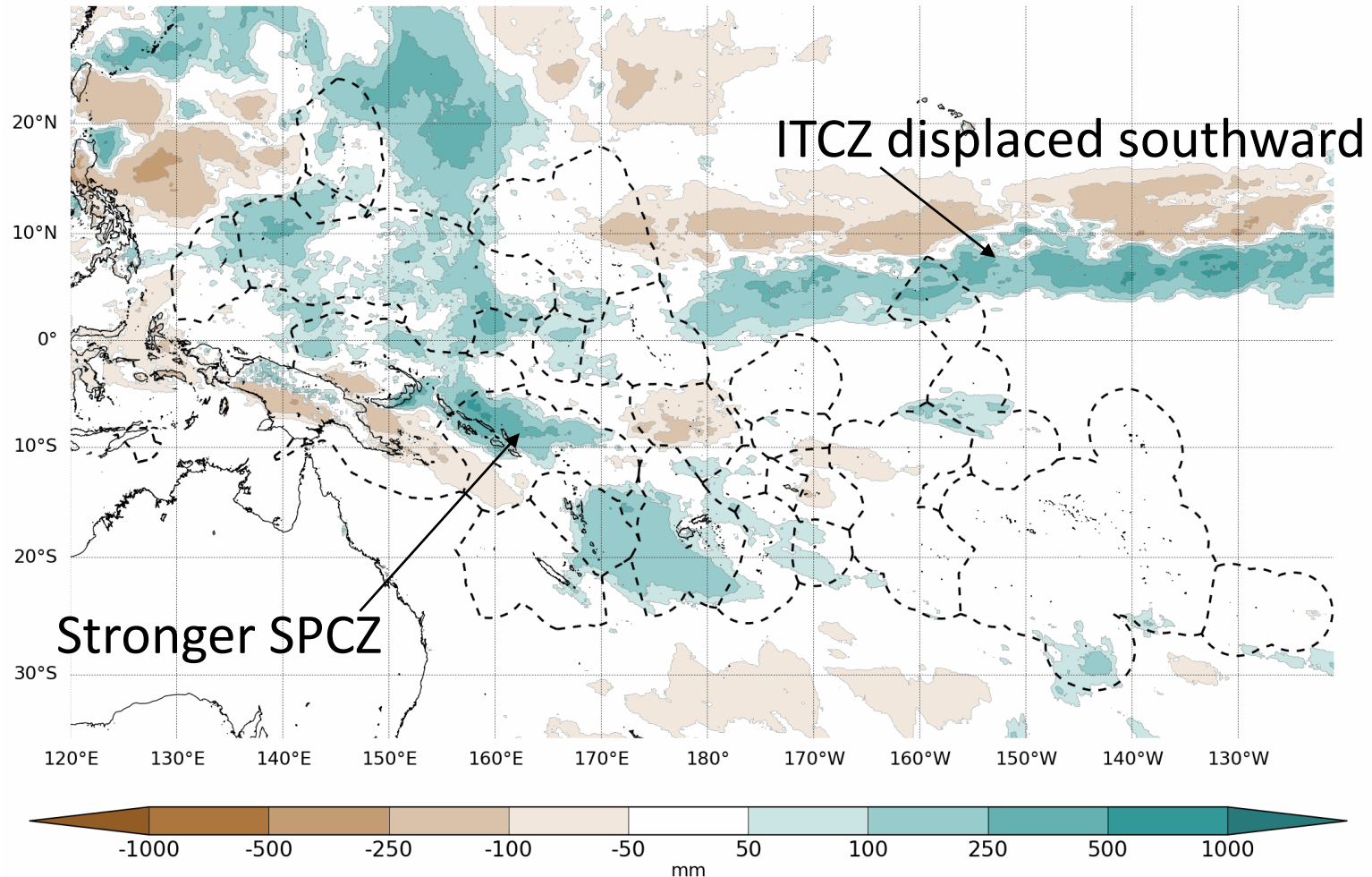
Run: 07/09/2023

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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 August 2023

1-month total rainfall anomaly ending August 2023



Data source: MSWEP

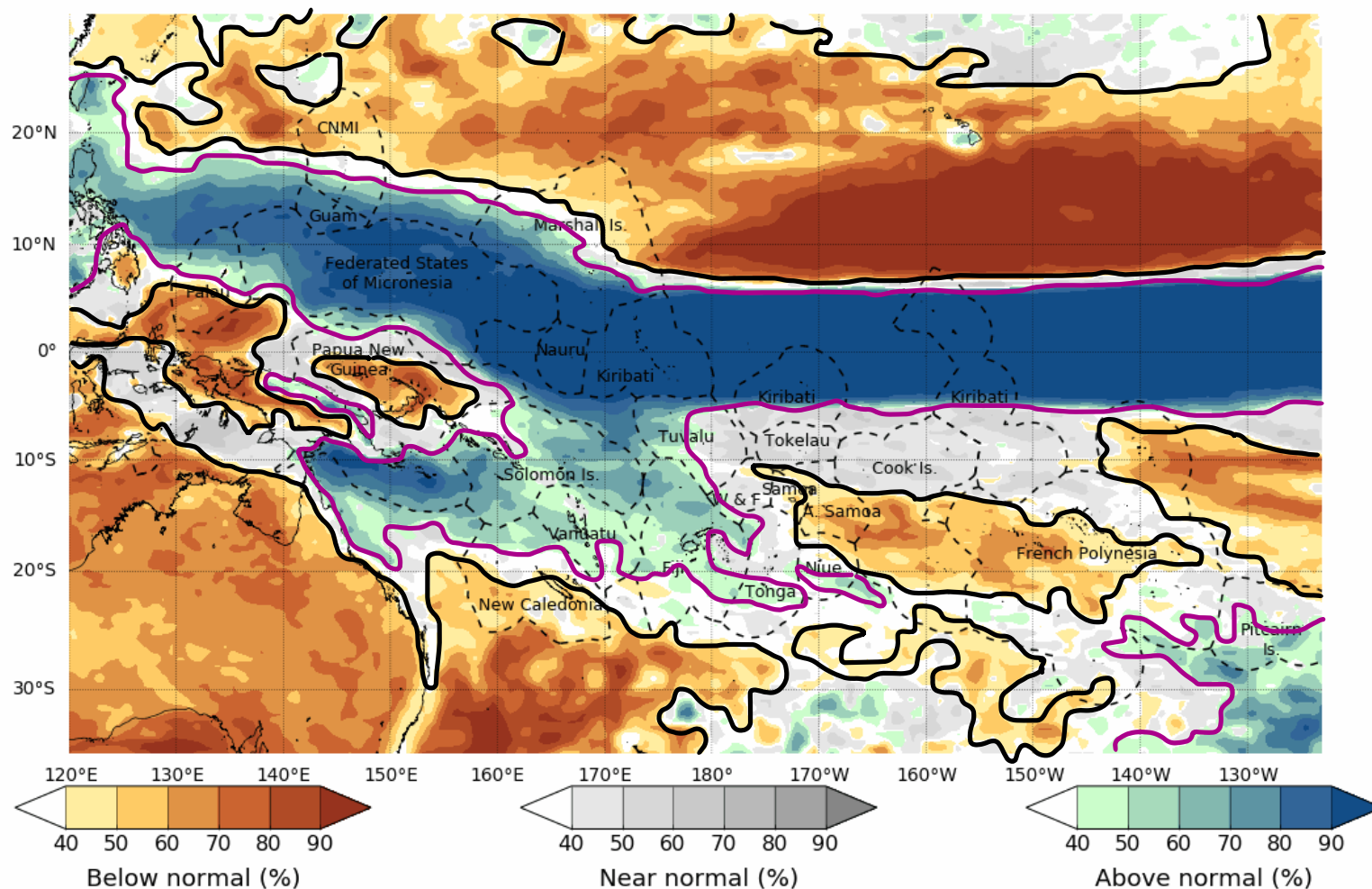
Run: 07/09/2023  
Base period: 1980-2021

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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: June-August

Tercile rainfall probabilities for  
June to August 2023



Base period: 1981-2018

Model: ACCESS-S2

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Model run: 29/05/2023

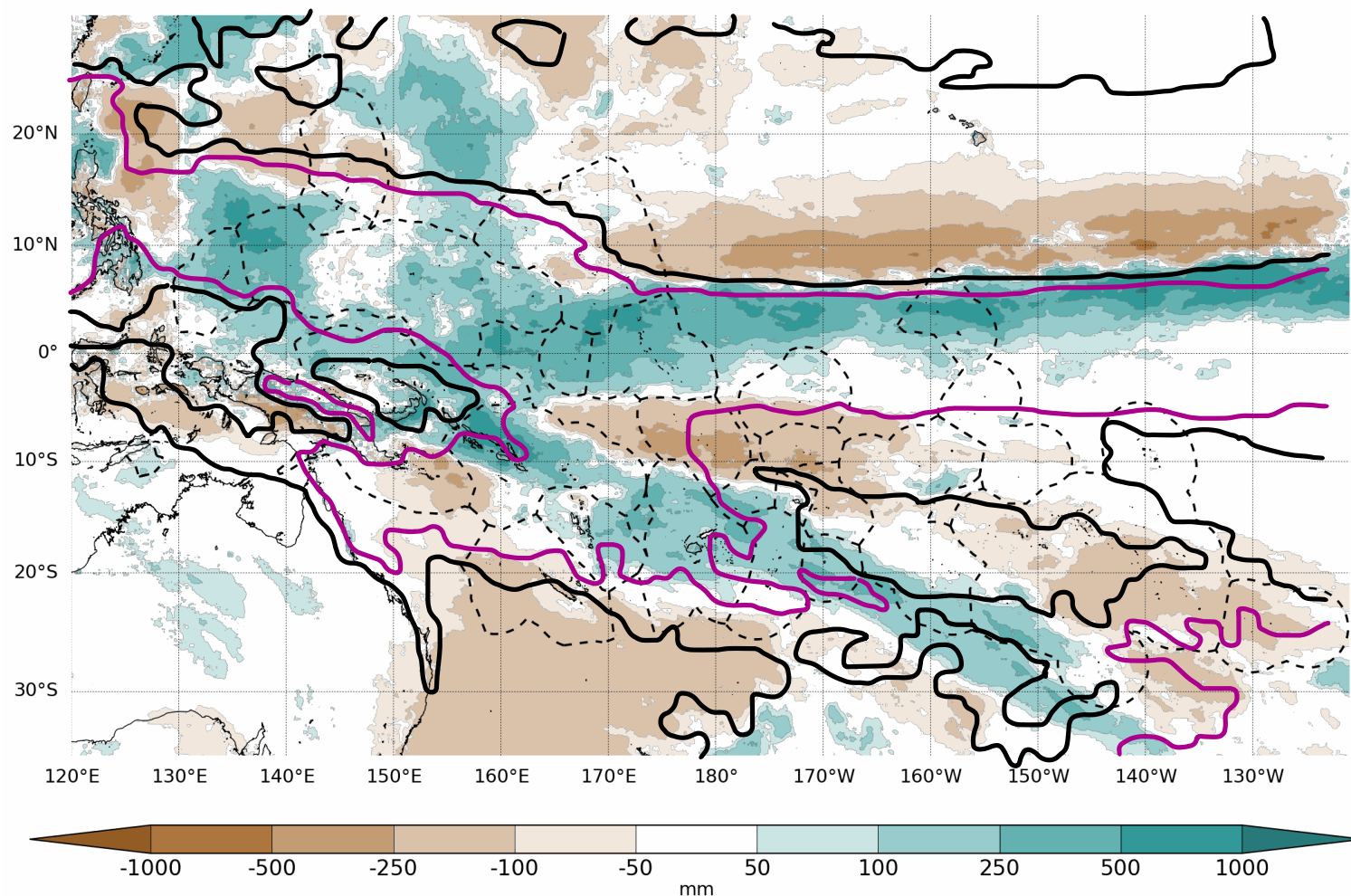
Issued: 01/06/2023

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.marineregions.org/>.



# Forecast Verification: June-August

3-month total rainfall anomaly ending August 2023



Data source: MSWEP

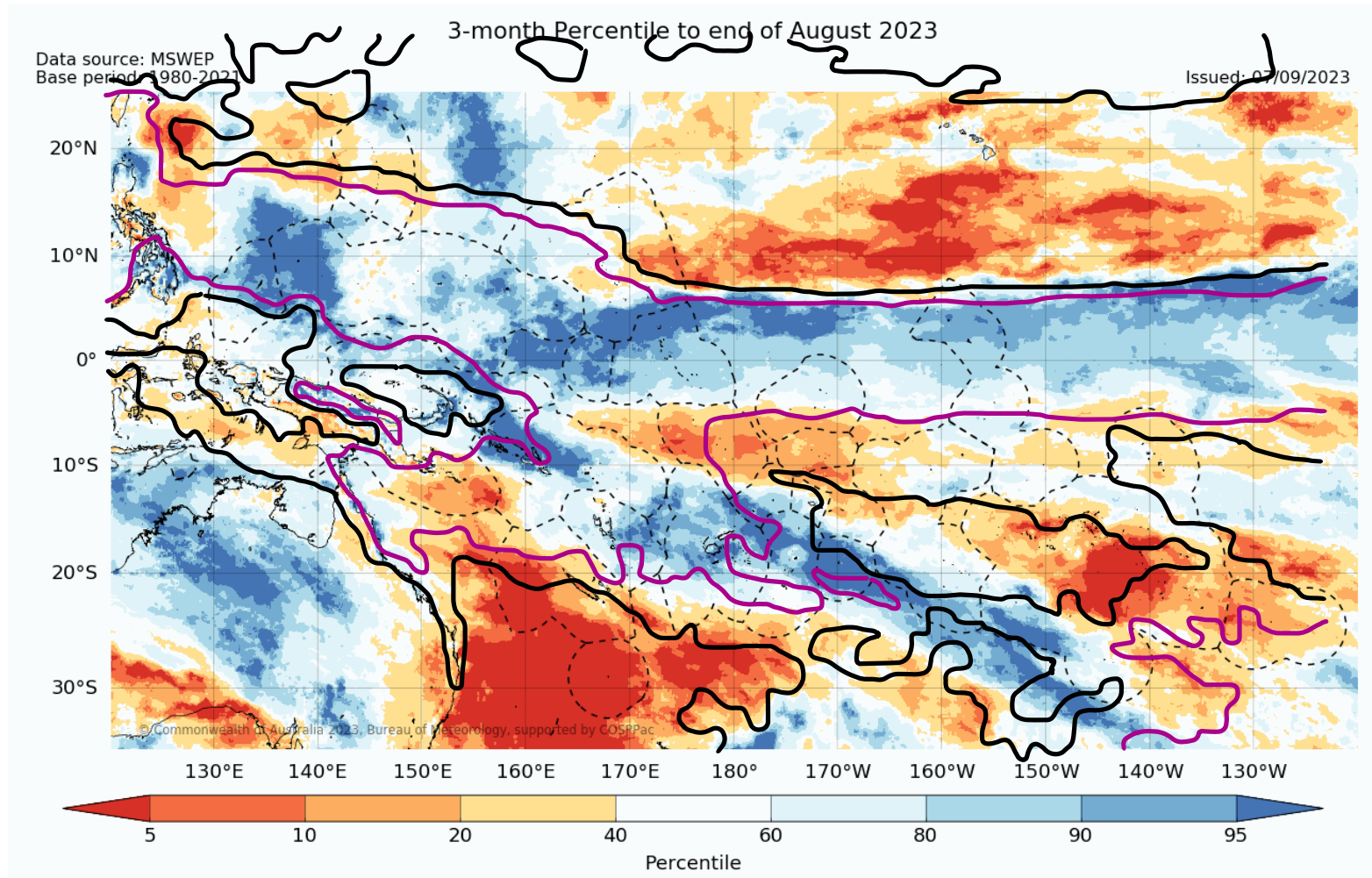
Run: 07/09/2023  
Base period: 1980-2021

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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/>.

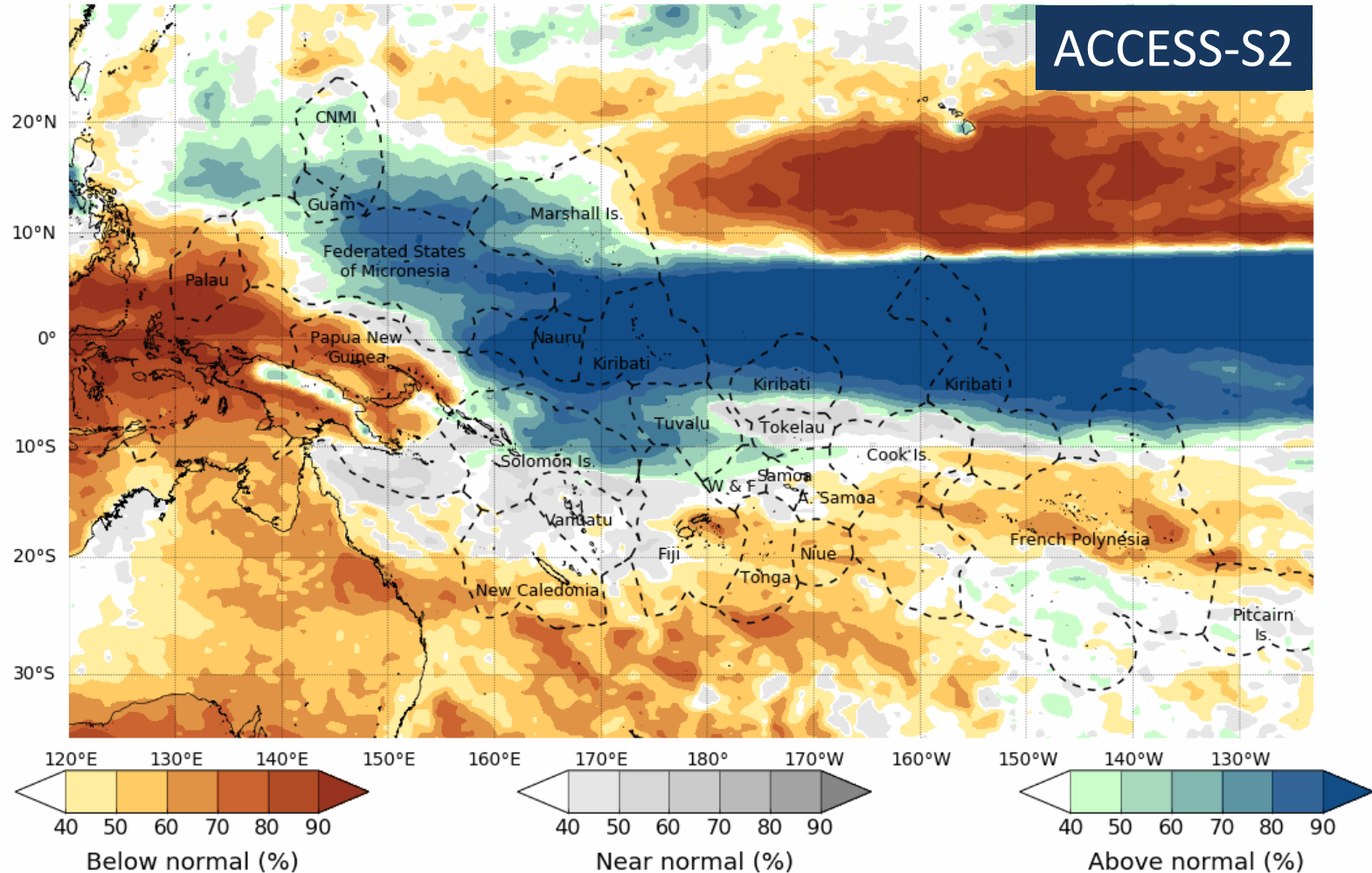


# Forecast Verification: June-August



# Model Rainfall Predictions (SON)

Tercile rainfall probabilities for  
September to November 2023



Base period: 1981-2018

Model: ACCESS-S2

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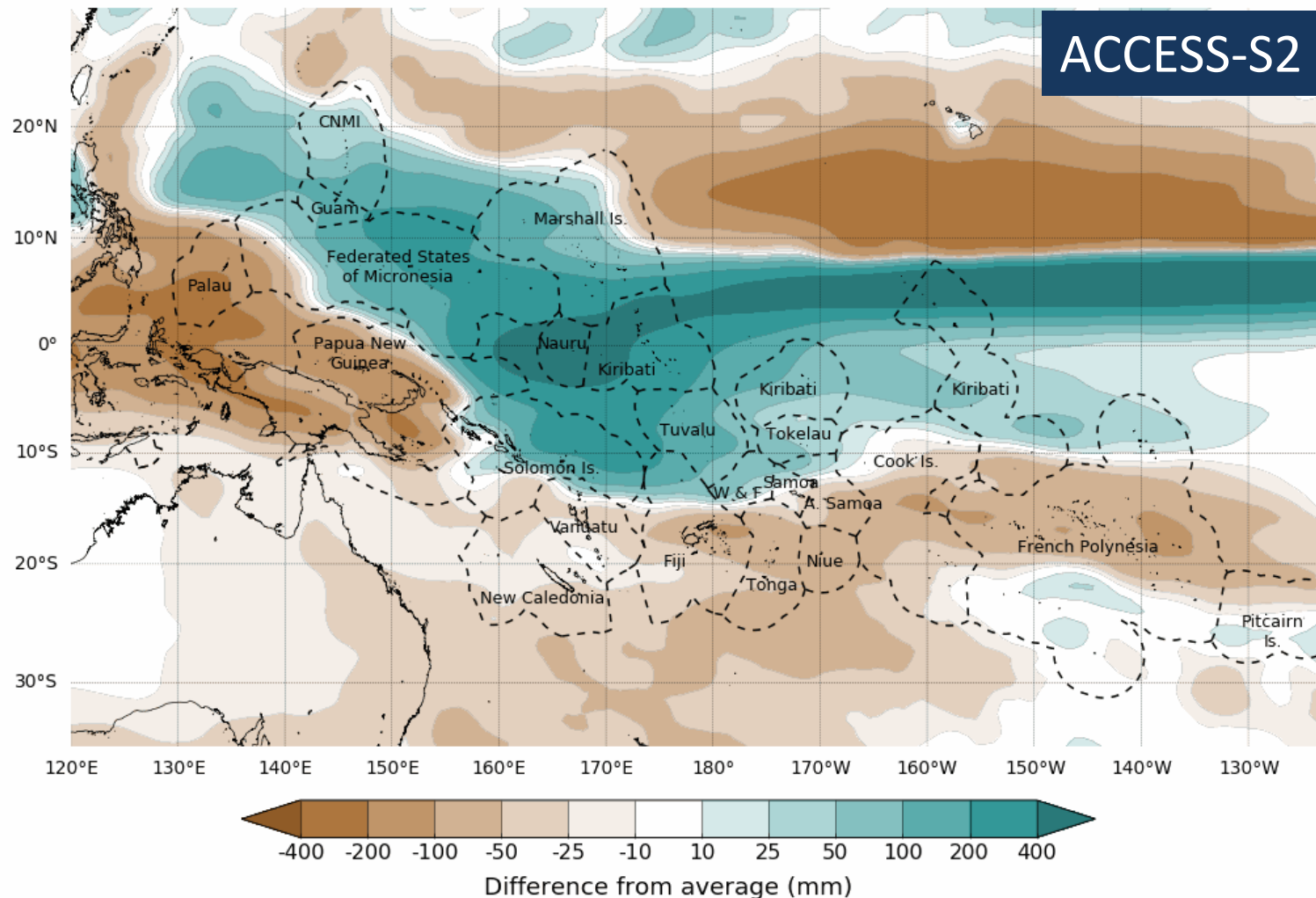
Model run: 28/08/2023

Issued: 30/08/2023

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/>.

# Difference from Average (SON)

Difference from average rainfall forecast for  
September to November 2023

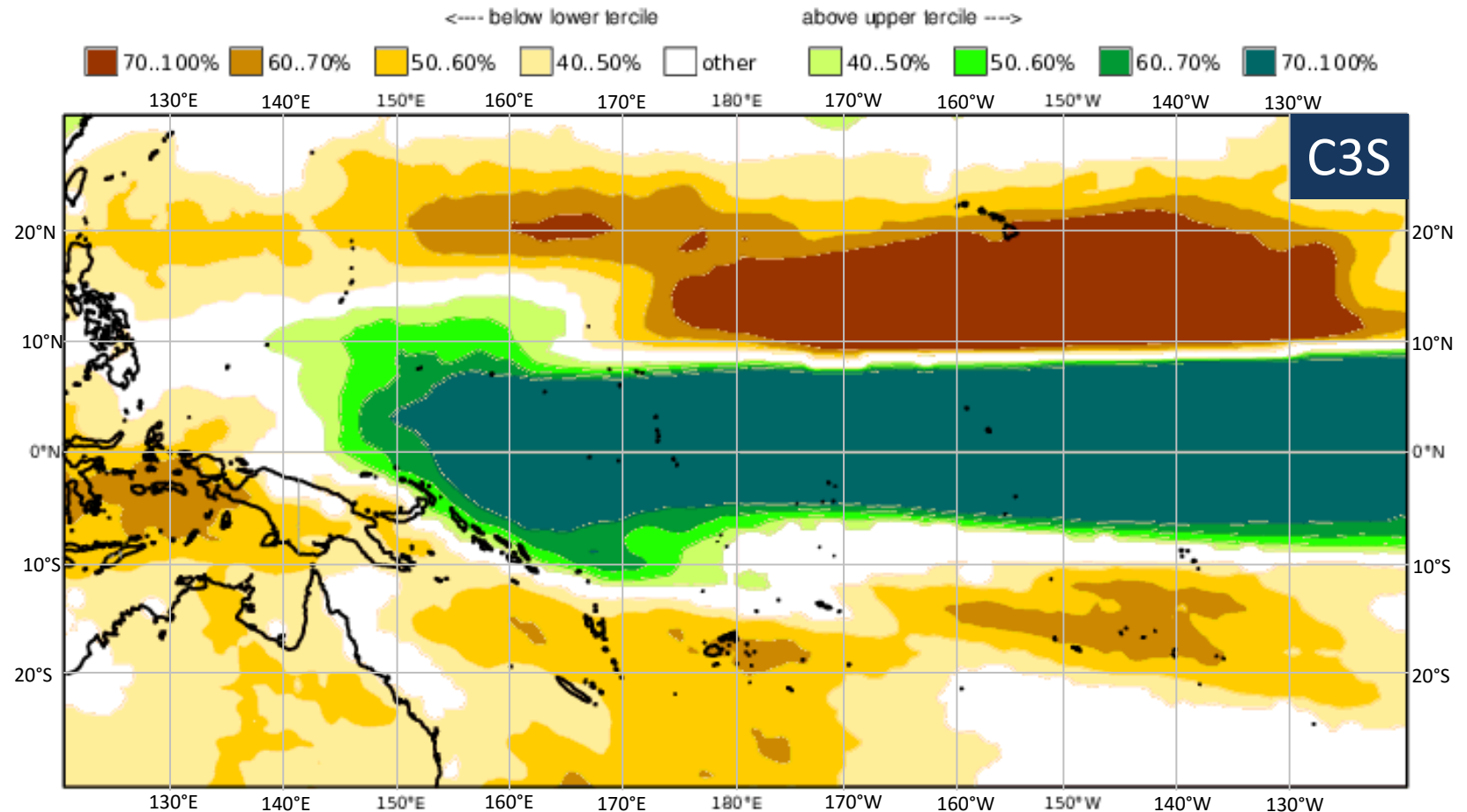


# Model Rainfall Predictions (SON)

C3S multi-system seasonal forecast    ECMWF/Met Office/Météo-France/CMCC/DWD/NCEP/JMA/ECCC  
Prob(most likely category of precipitation)    SON 2023

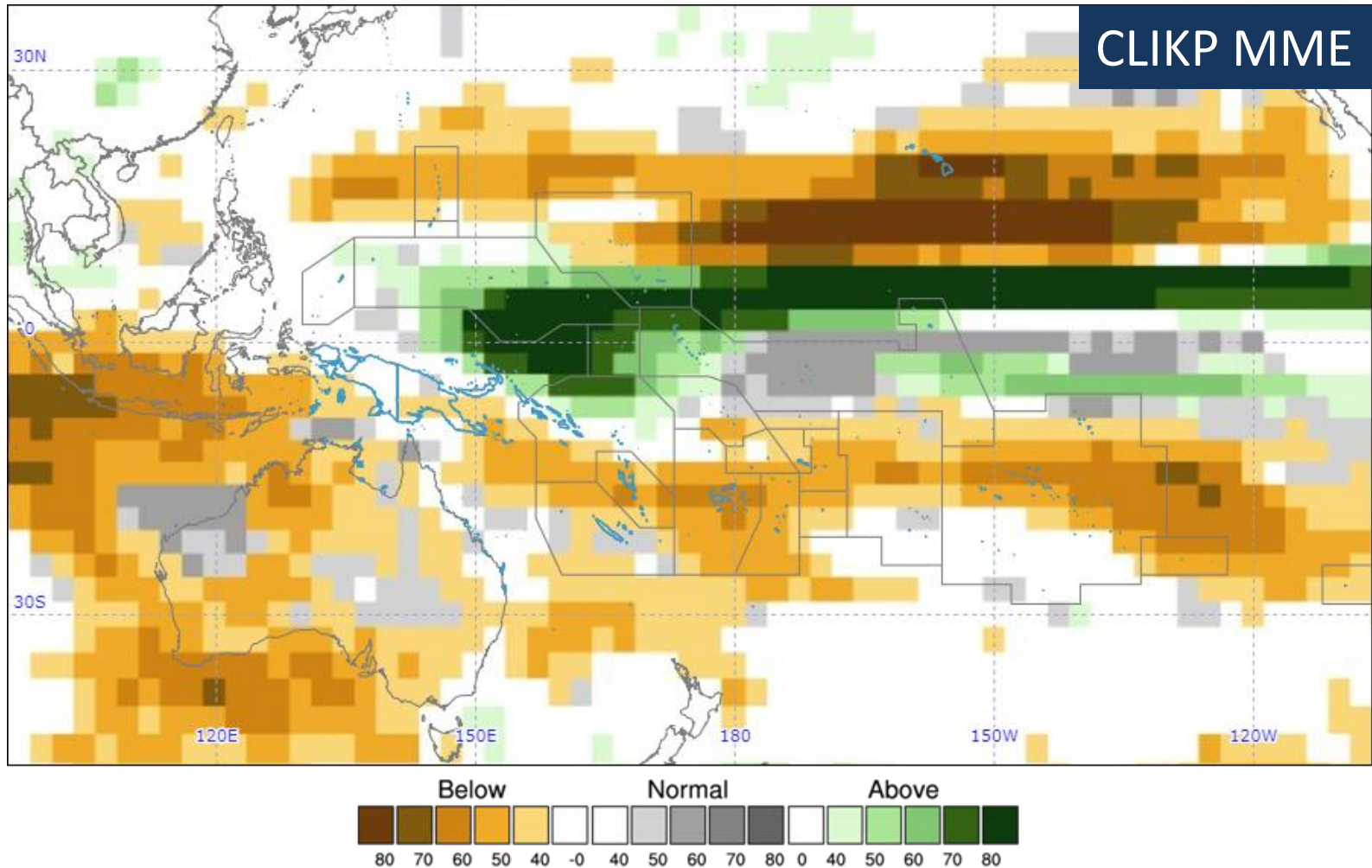
Nominal forecast start: 01/08/23

Unweighted mean





# Model Rainfall Predictions (SON)



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

Model: APCC, MSC, NASA, NCEP, PNU

Generated using CLIK® (2023-9-12)

© APEC Climate Center

# Model Rainfall Predictions (SON)

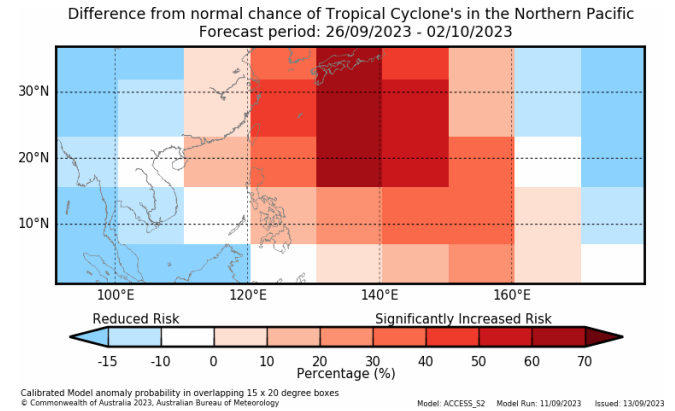
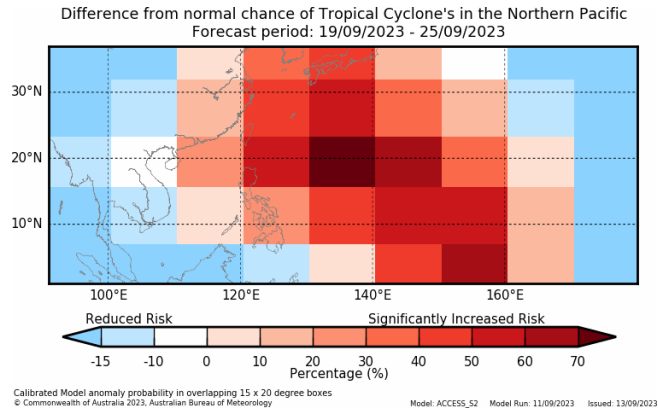
September to November 2023			
	ACCESS-S	C3S	CLIKP
Cook Is North			
Cook Is South			
Fiji West			
Fiji Central			
Fiji East			
Fiji North			
Fiji Rotuma			
FSM West			
FSM Central			
FSM East			
Kiribati West			
Kiribati Central			
Kiribati East			
RMI North			
RMI Central			
RMI South			
Nauru			
Niue			
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						

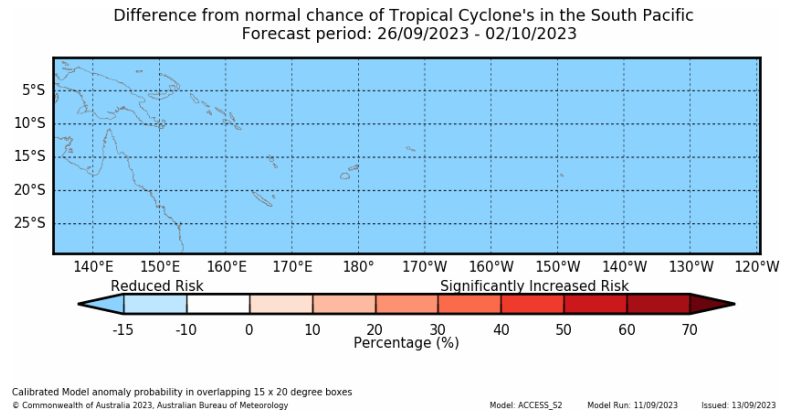
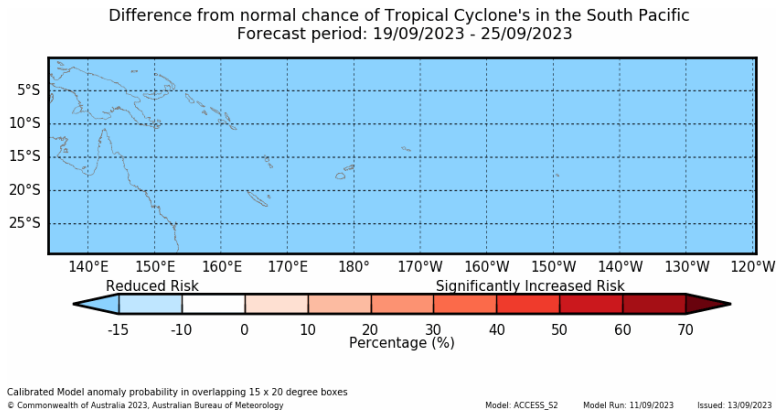


# TC Outlooks

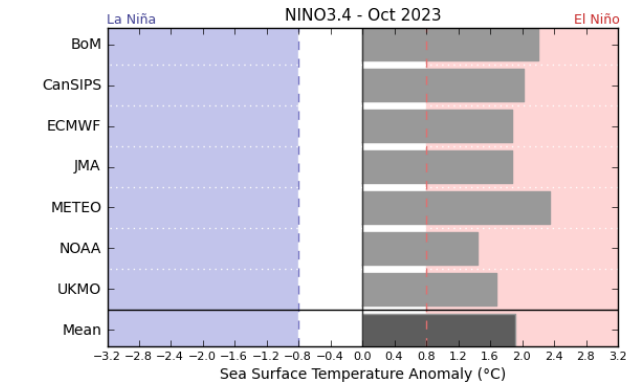
## Northwest Pacific



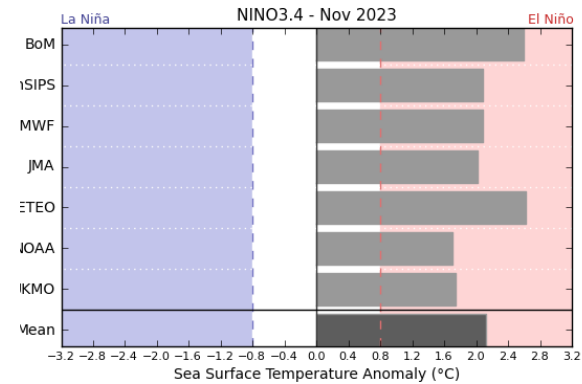
## South Pacific



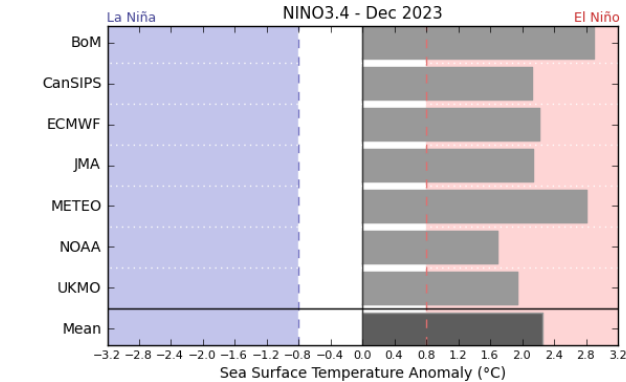
# Climate Model Summary



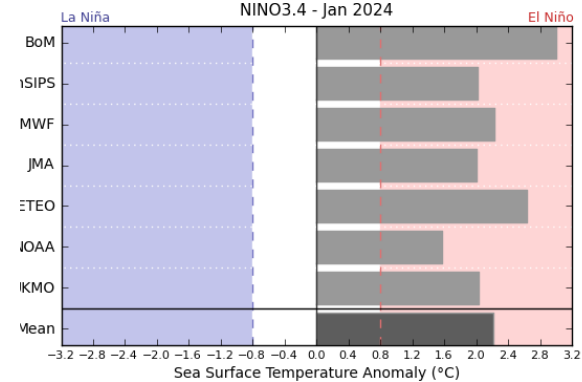
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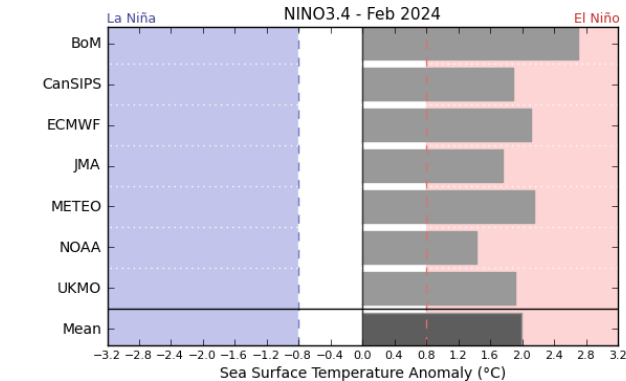
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# IRI Climate Model Summary

