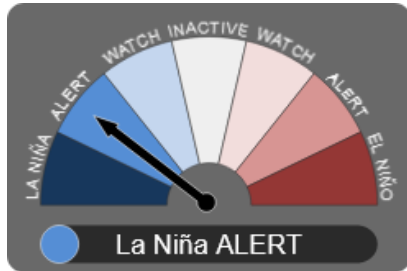


# ENSO update - OCOF 180

13 September 2022

# ENSO Update

## La Niña ALERT continues

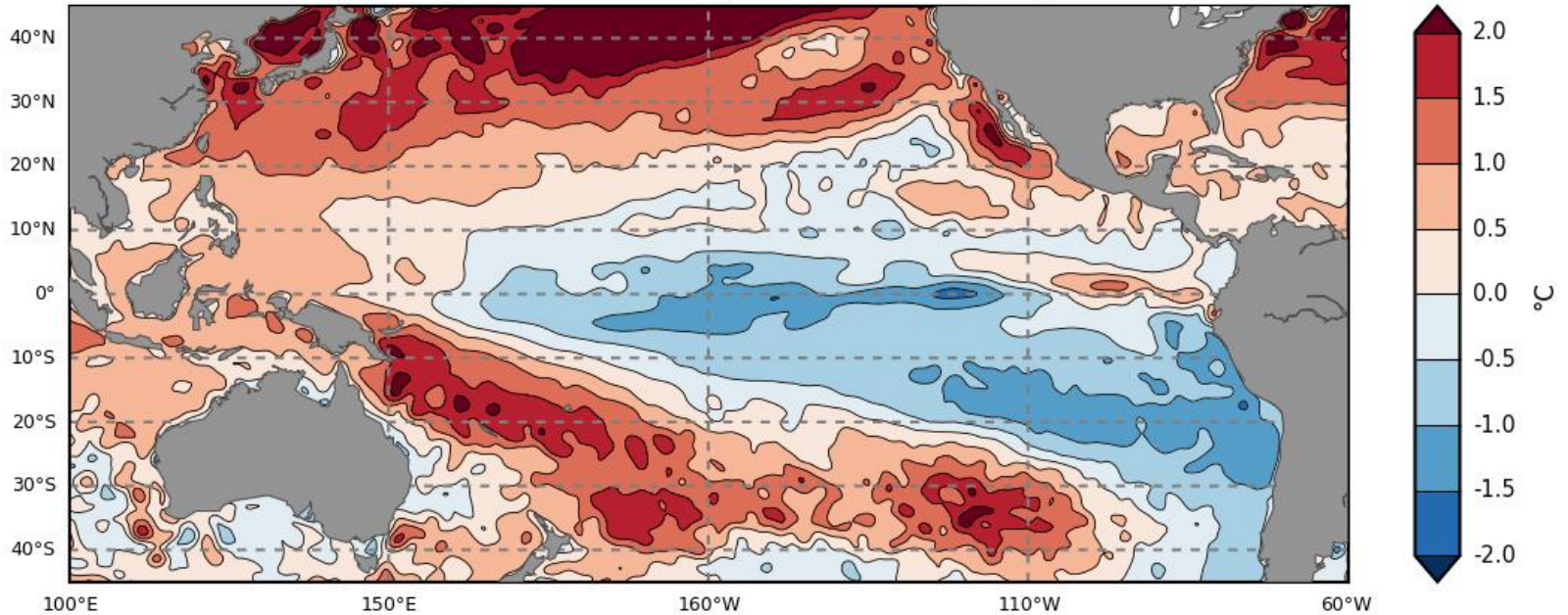


- The Bureau's ENSO Outlook continues at La Niña ALERT, indicating at least a 70% chance of La Niña reforming later this year. This is around triple the normal likelihood.
- Neutral, but cooler-than-average sea surface temperatures (SSTs), persist in the central and eastern tropical Pacific. Some atmospheric indicators, such as the Southern Oscillation Index (SOI) and cloudiness near the Date Line, show a La Niña-like signal.
- Four of seven climate models surveyed by the Bureau suggest La Niña could return by early-to-mid southern hemisphere spring.

# August 2022 SSTs

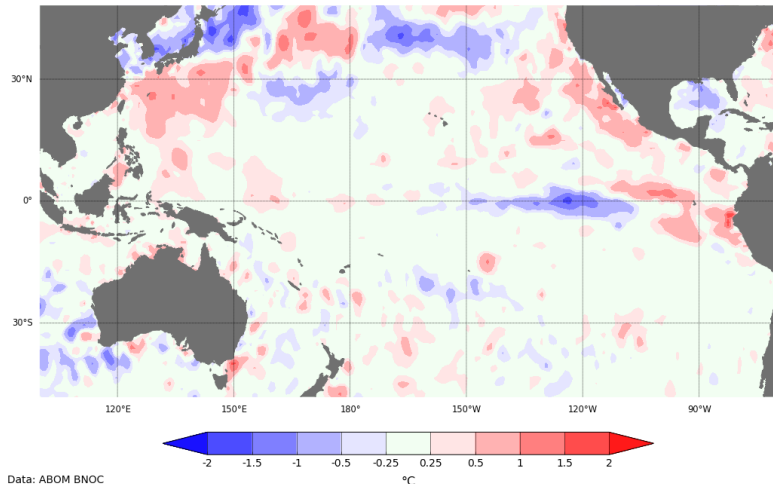
Pacific Ocean

Monthly Average Sea Surface Temperature Anomaly: August 2022



©Commonwealth of Australia 2022  
Australian Bureau of Meteorology, COSPPac COMP

Change in the monthly SST anomaly: August-2022 - July-2022

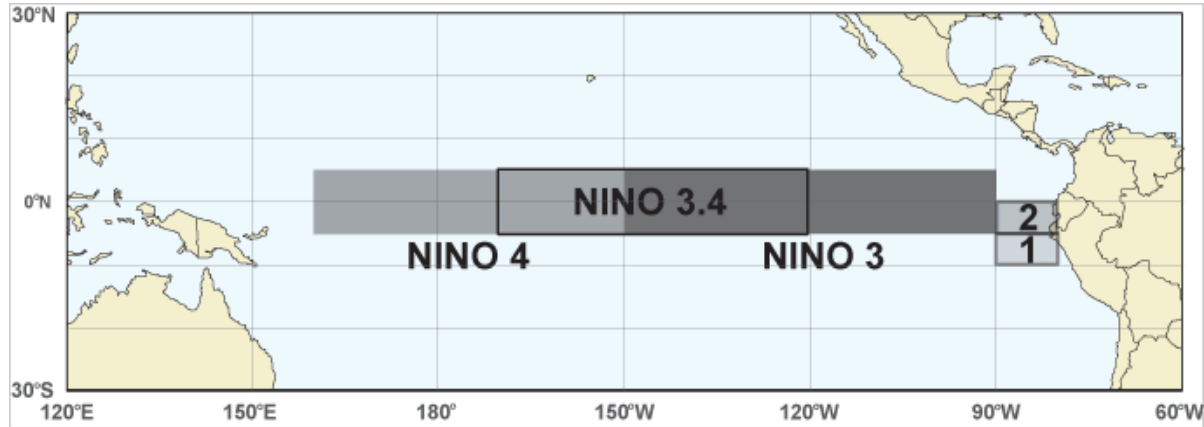


Data: ABOM BNOG  
Climatology baseline: 1961 to 1990  
© Commonwealth of Australia 2022, Australian Bureau of Meteorology

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

Anomaly monthly difference  
Created: 05/09/2022

# NINO INDICES SST anomalies (°C)

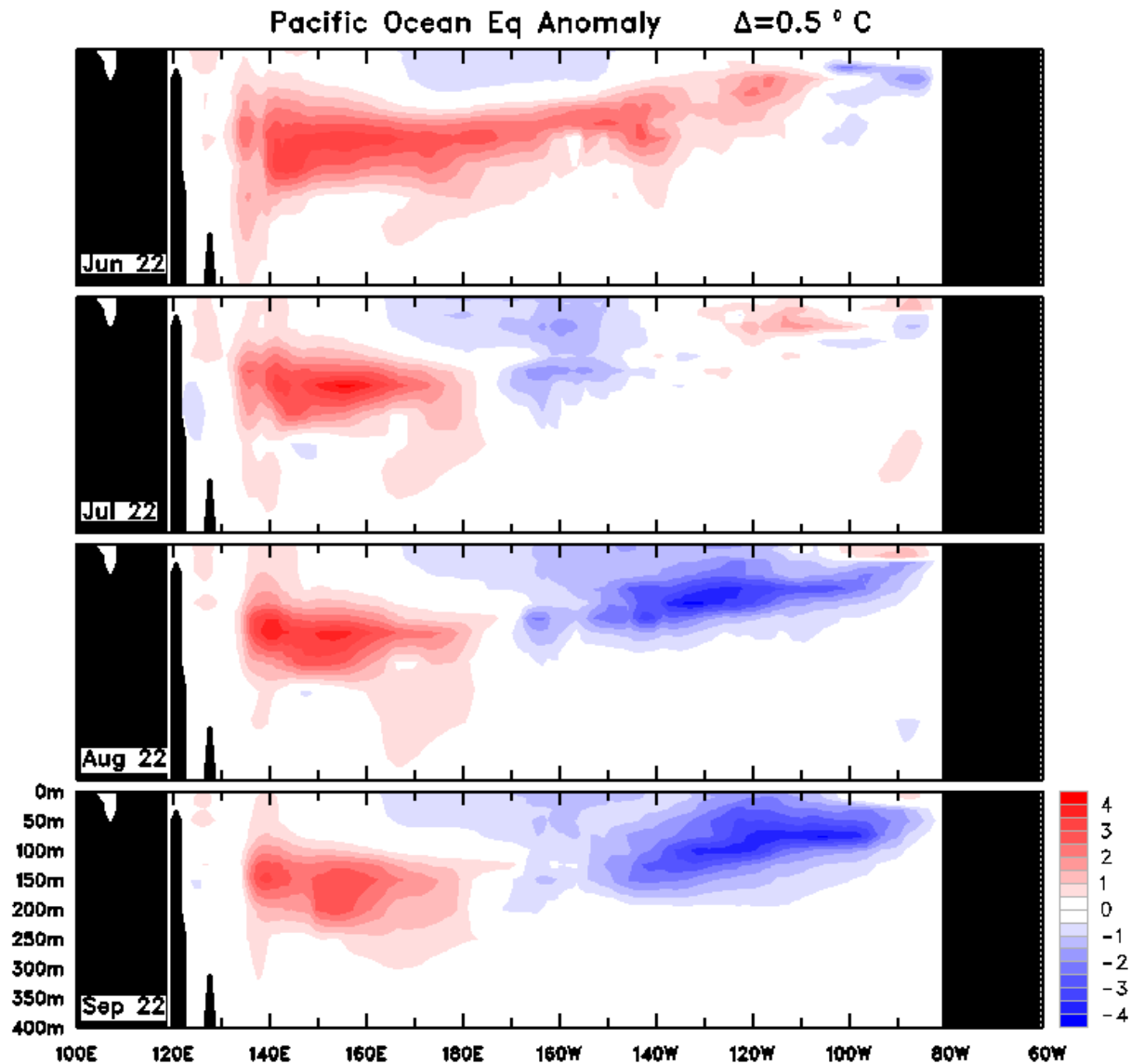


| Index   | July 2022 | Aug 2022 | Latest weekly |
|---------|-----------|----------|---------------|
| NINO3   | -0.1      | -0.2     | -0.6          |
| NINO3.4 | -0.4      | -0.7     | -0.8          |
| NINO4   | -0.6      | -0.6     | -0.7          |

Weekly data for the week ending 11/09/2022

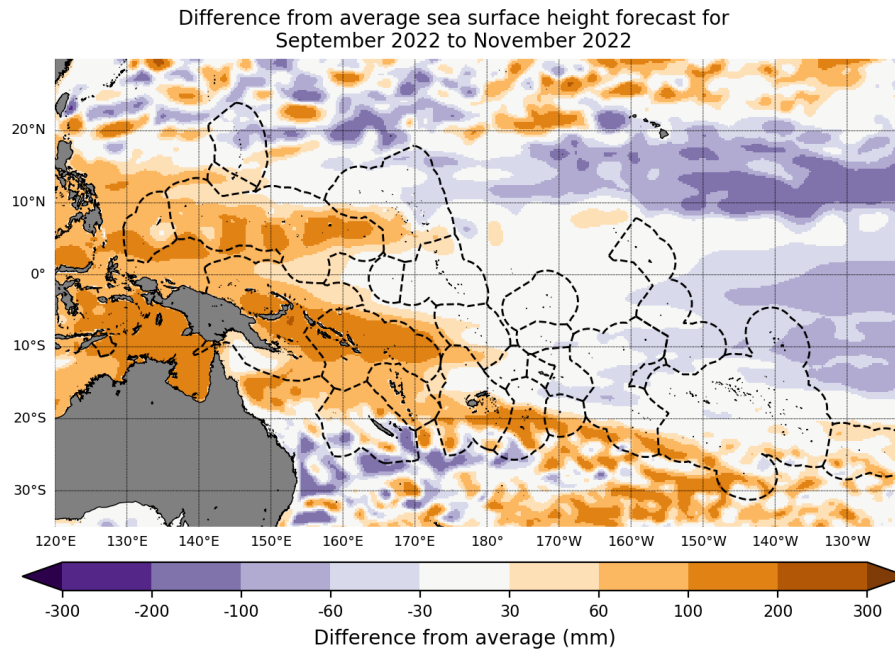
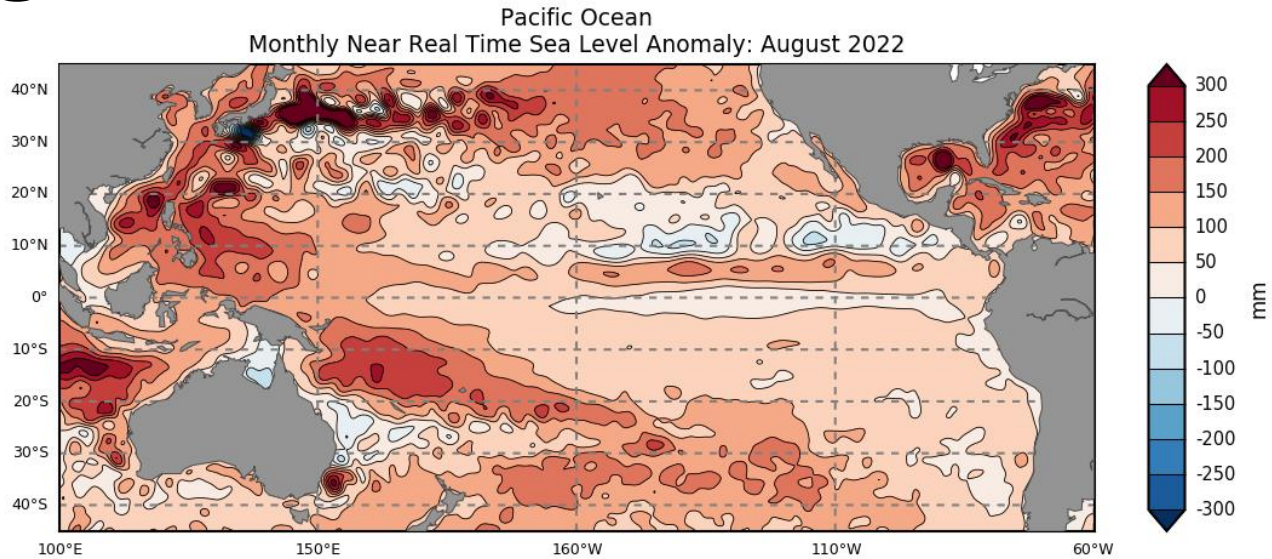
# Equatorial Pacific sub-surface profile

## Bureau of Meteorology



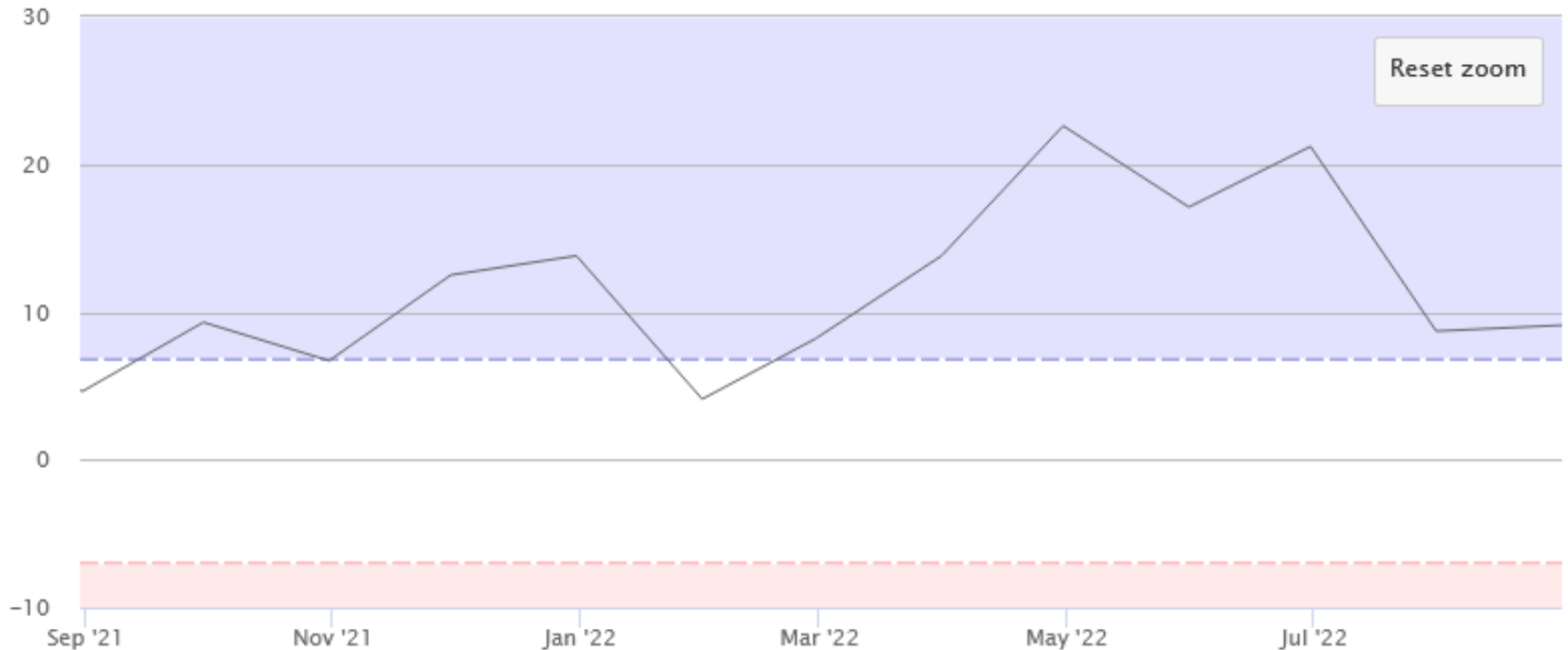
Analysis done Sep 6 22:14

# August 2022 Sea Level Anomaly



# Southern Oscillation Index

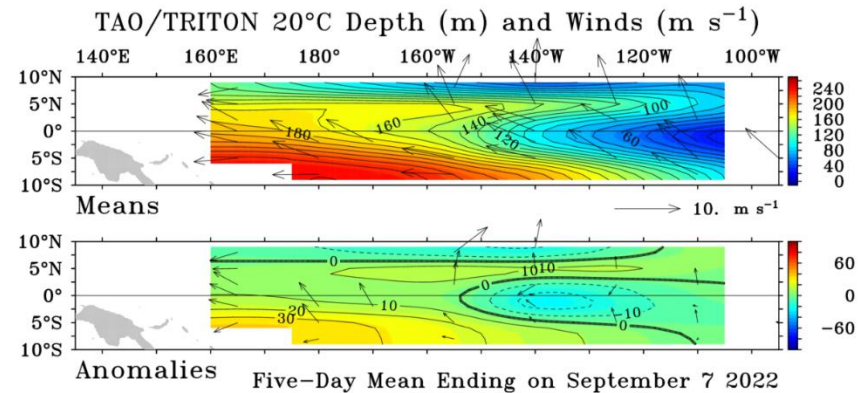
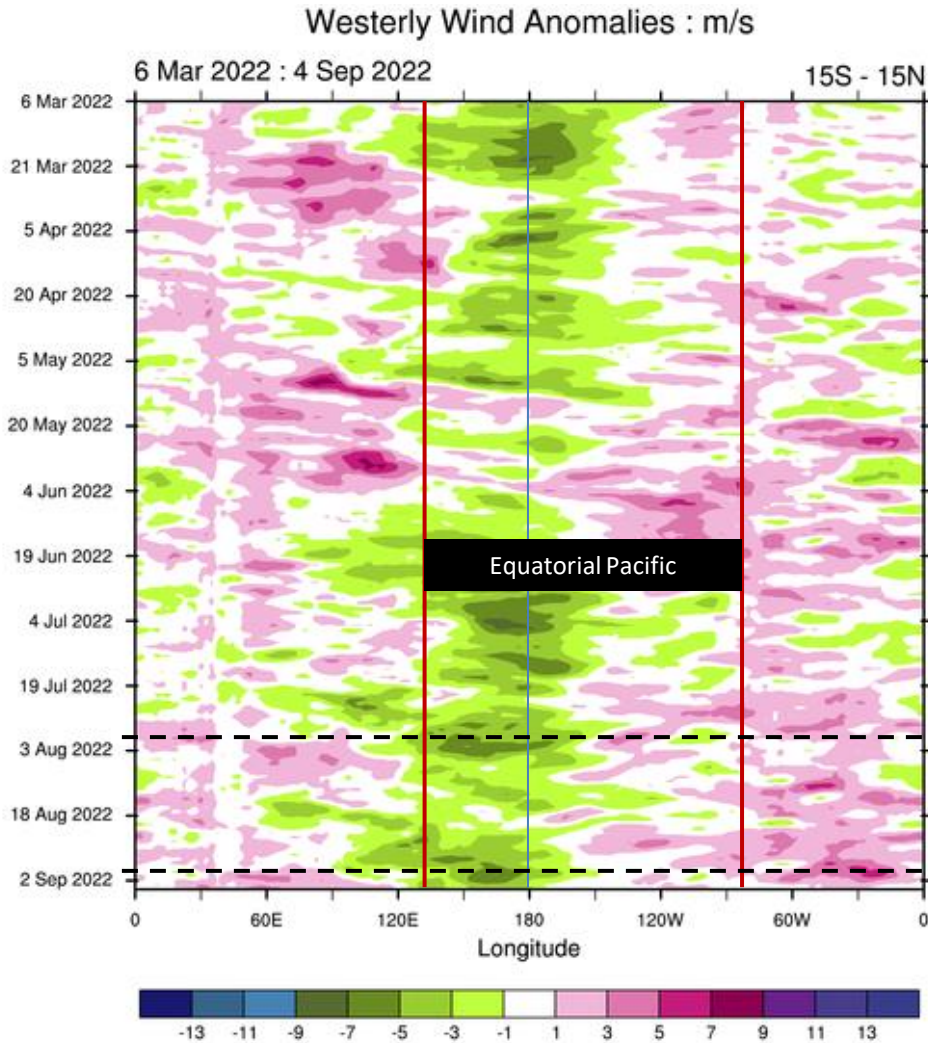
Southern Oscillation Index – monthly



| Southern Oscillation Index monthly data |       |       |       |       |       |       |       |      |      |      |       |       |
|---|-------|-------|-------|-------|-------|-------|-------|------|------|------|-------|-------|
| Year                                    | Jan   | Feb   | Mar   | Apr   | May   | Jun   | Jul   | Aug  | Sep  | Oct  | Nov   | Dec   |
| 2022                                    | +4.1  | +8.2  | +13.8 | +22.6 | +17.1 | +21.2 | +8.7  | +9.1 | -    | -    | -     | -     |
| 2021                                    | +16.5 | +11.5 | -0.3  | +2.0  | +3.6  | +2.6  | +15.9 | +4.6 | +9.3 | +6.7 | +12.5 | +13.8 |

At 10 September 2022: 30-day SOI = +11; 90-day SOI = +12

# Equatorial Trade Winds

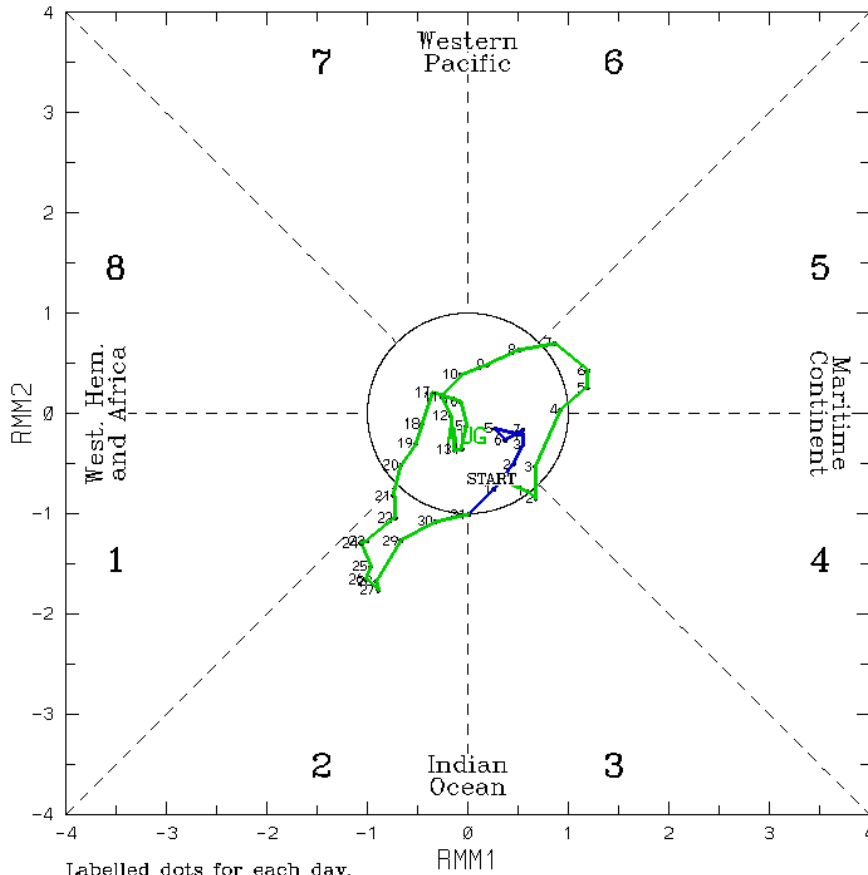


Global Tropical Moored Buoy Array Program Office, NOAA/PMEL



# Madden-Julian Oscillation

(RMM1,RMM2) phase space for 30-Jul-2022 to 7-Sep-2022



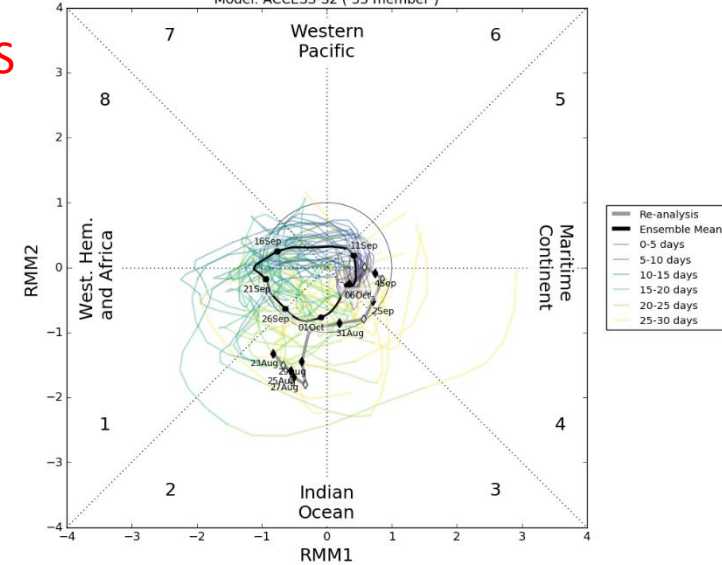
Labelled dots for each day.

Blue line is for Sep, green line is for Aug, red line is for Jul.

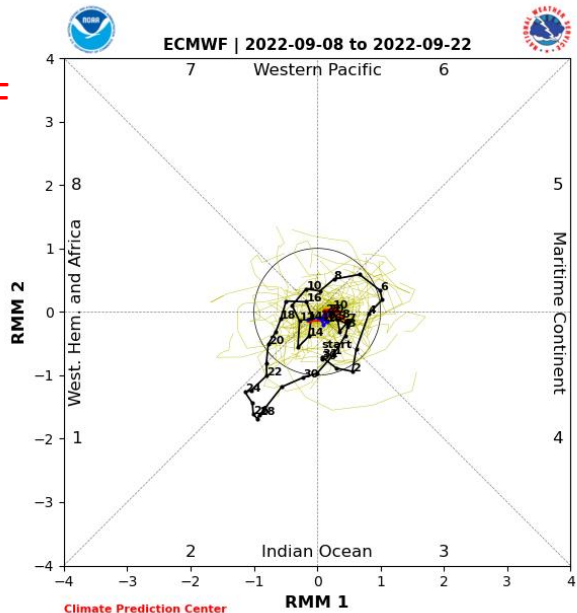
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ACCESS

MJO Index Forecast initialised: 6 September 2022  
Model: ACCESS-S2 (33 member)

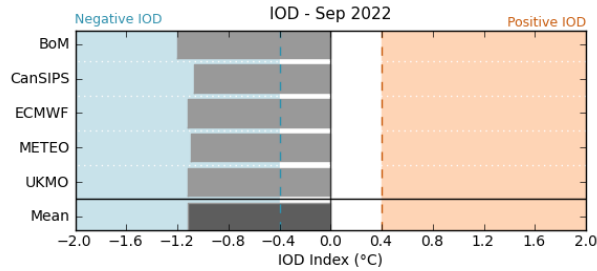


ECMWF

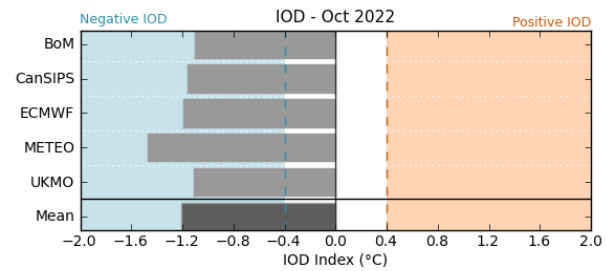


Climate Prediction Center

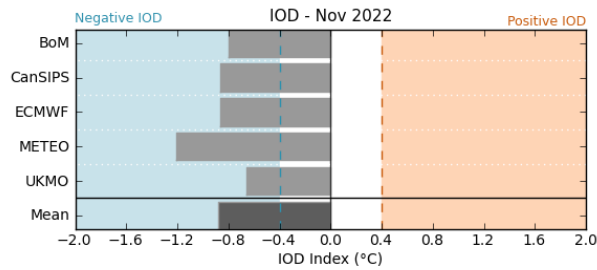
# Indian Ocean Dipole (IOD)



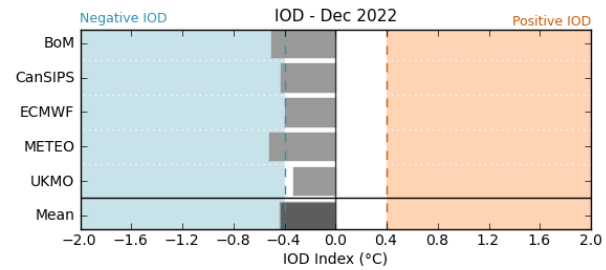
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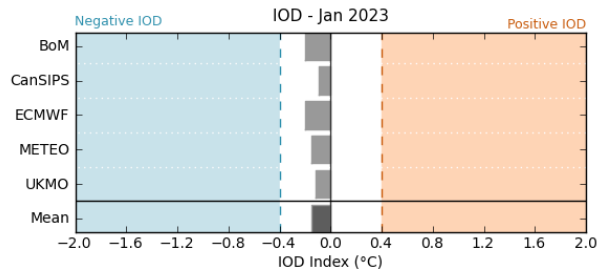
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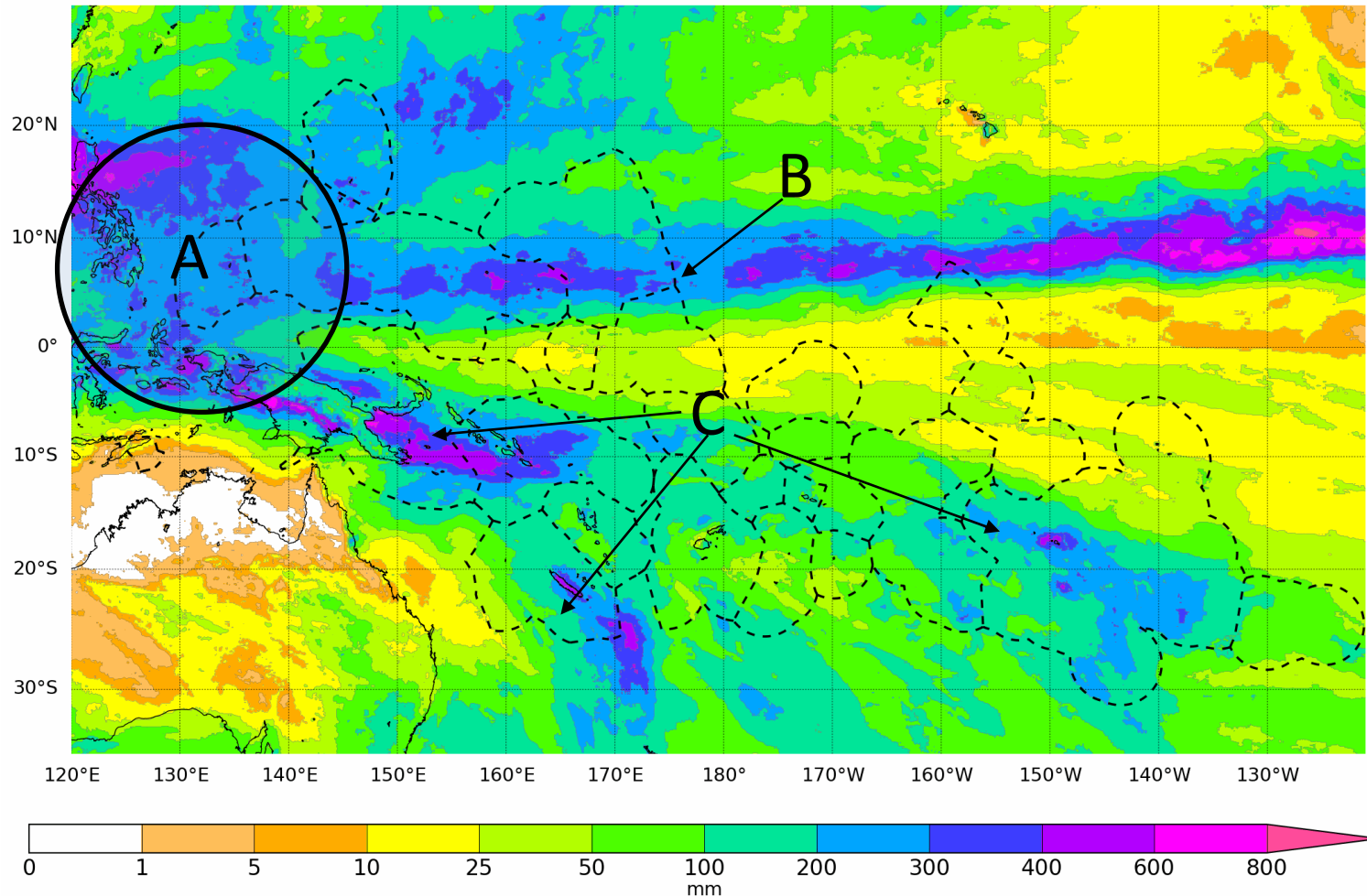
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# Satellite Rainfall August 2022

1-month total rainfall ending August 2022



Source: MSWEP

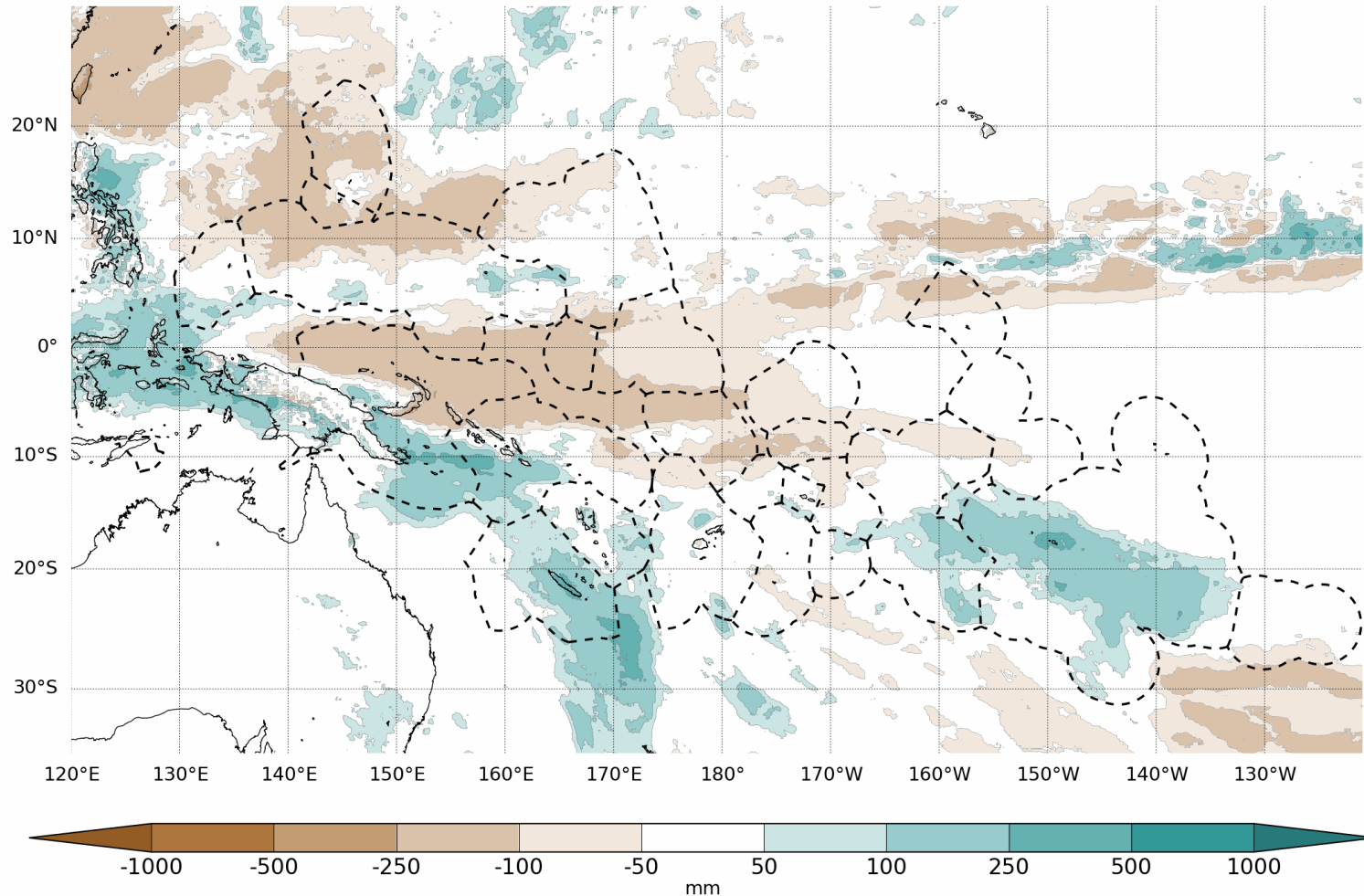
Map created: 07/09/2022 (UTC)

© Commonwealth of Australia 2022, 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/>.

# Satellite Rainfall Anomaly August 2022

1-month total rainfall anomaly ending August 2022



Source: MSWEP

Base period: 1980-2021

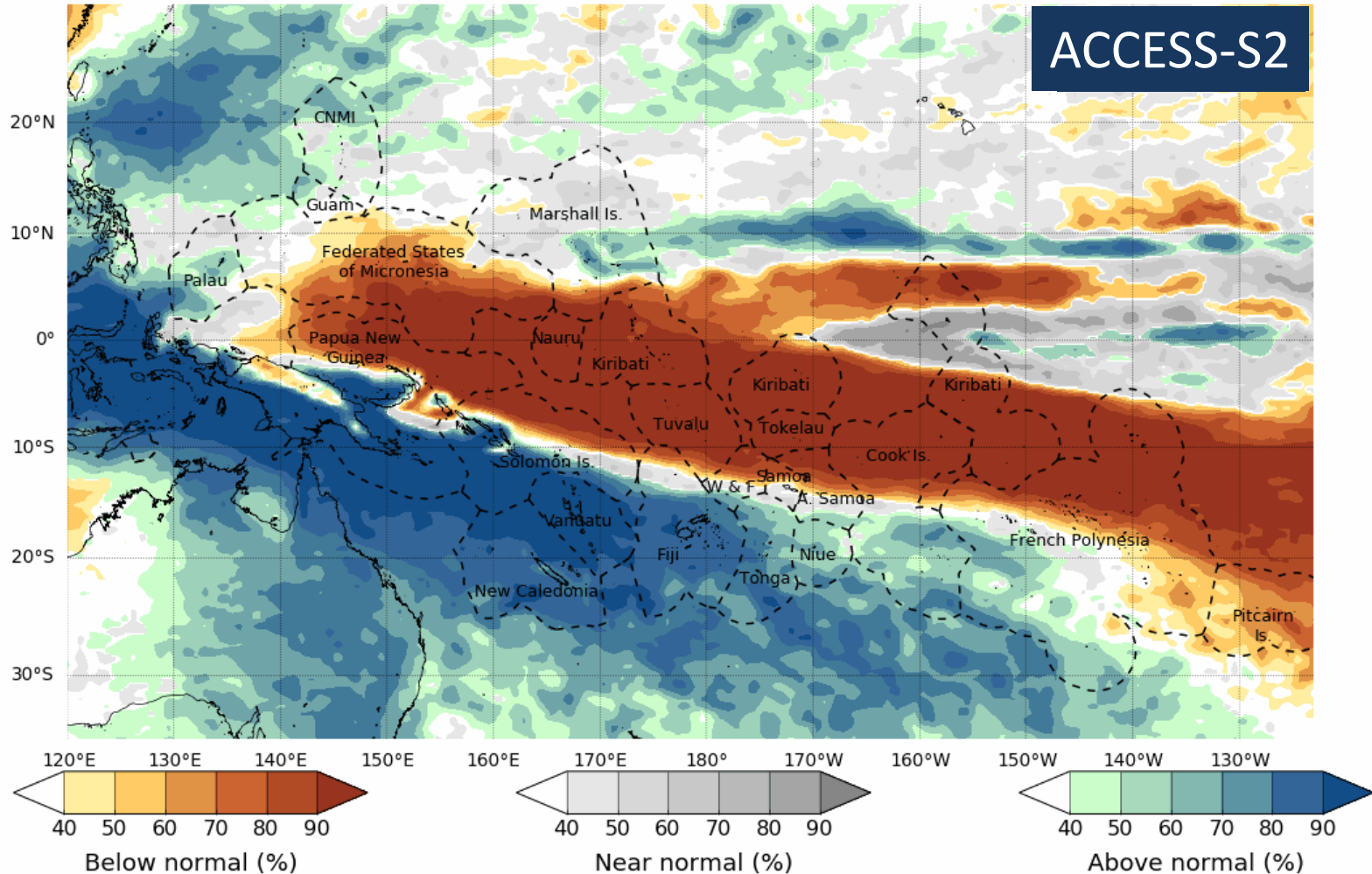
Map created: 07/09/2022 (UTC)

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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/>.

# Model Rainfall Predictions (SON)

Tercile rainfall probabilities for  
September to November 2022



Base period: 1981-2018  
Model: ACCESS-S2

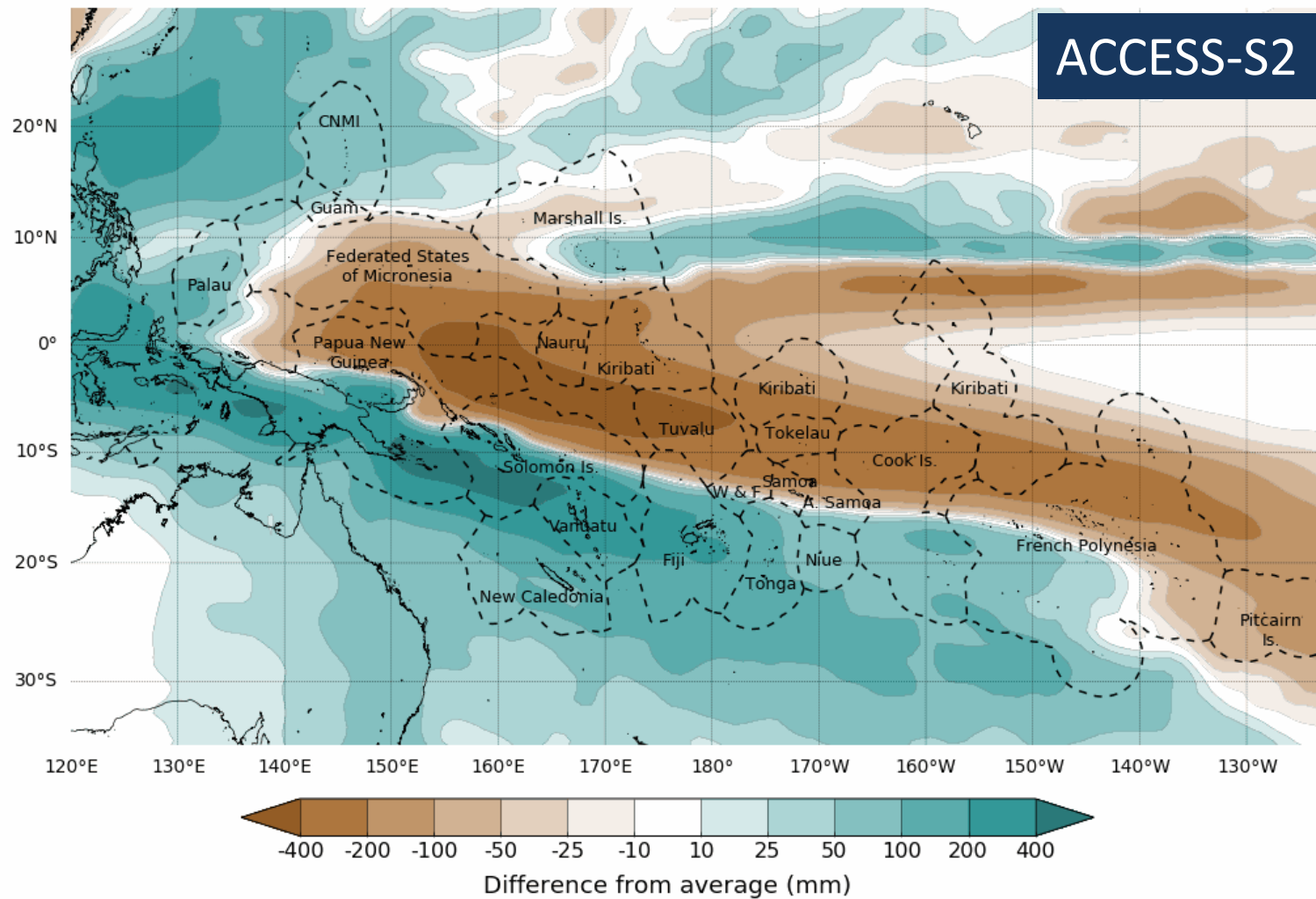
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Model run: 29/08/2022  
Issued: 01/09/2022

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/>.

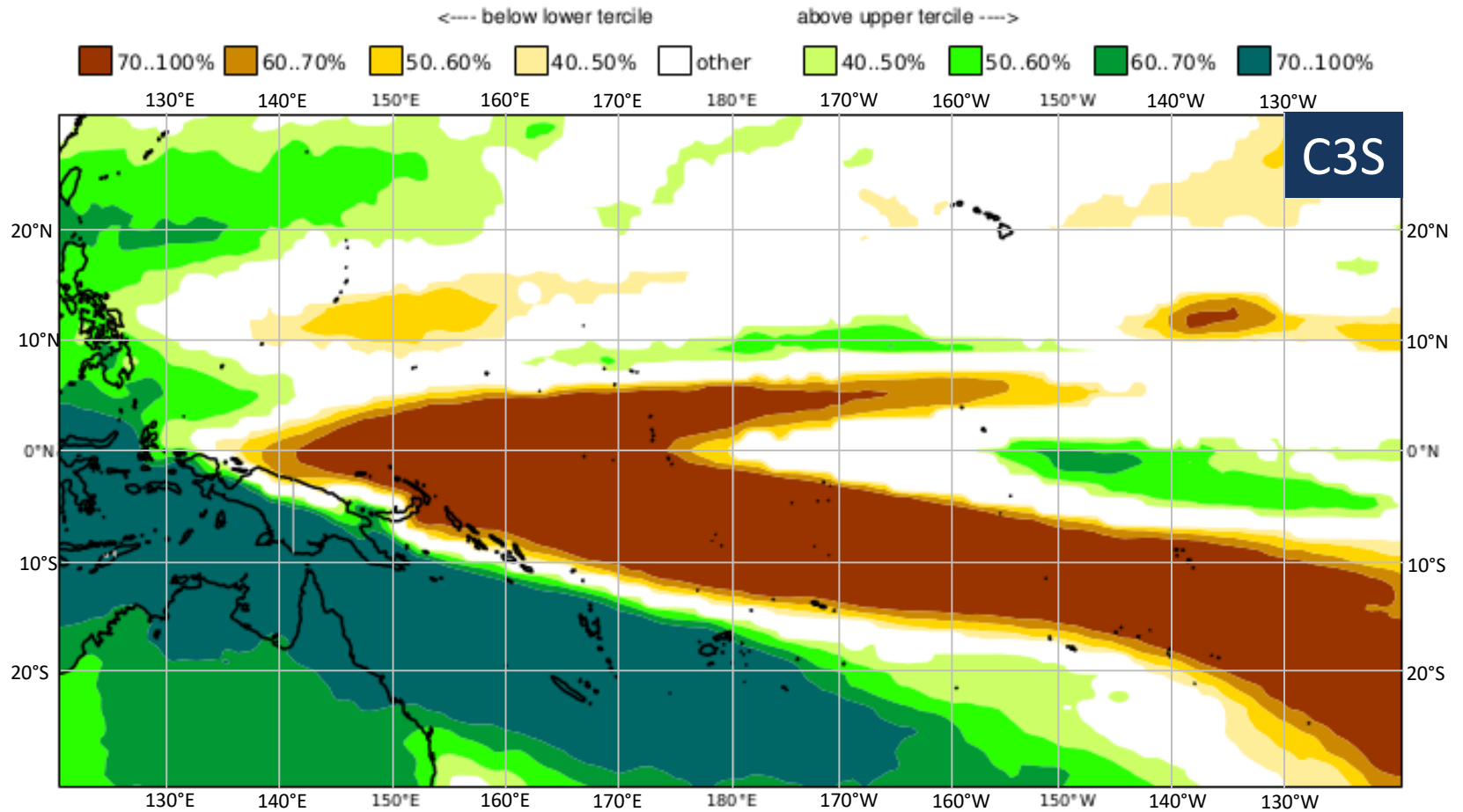
# Difference from Average (SON)

Difference from average rainfall forecast for September to November 2022

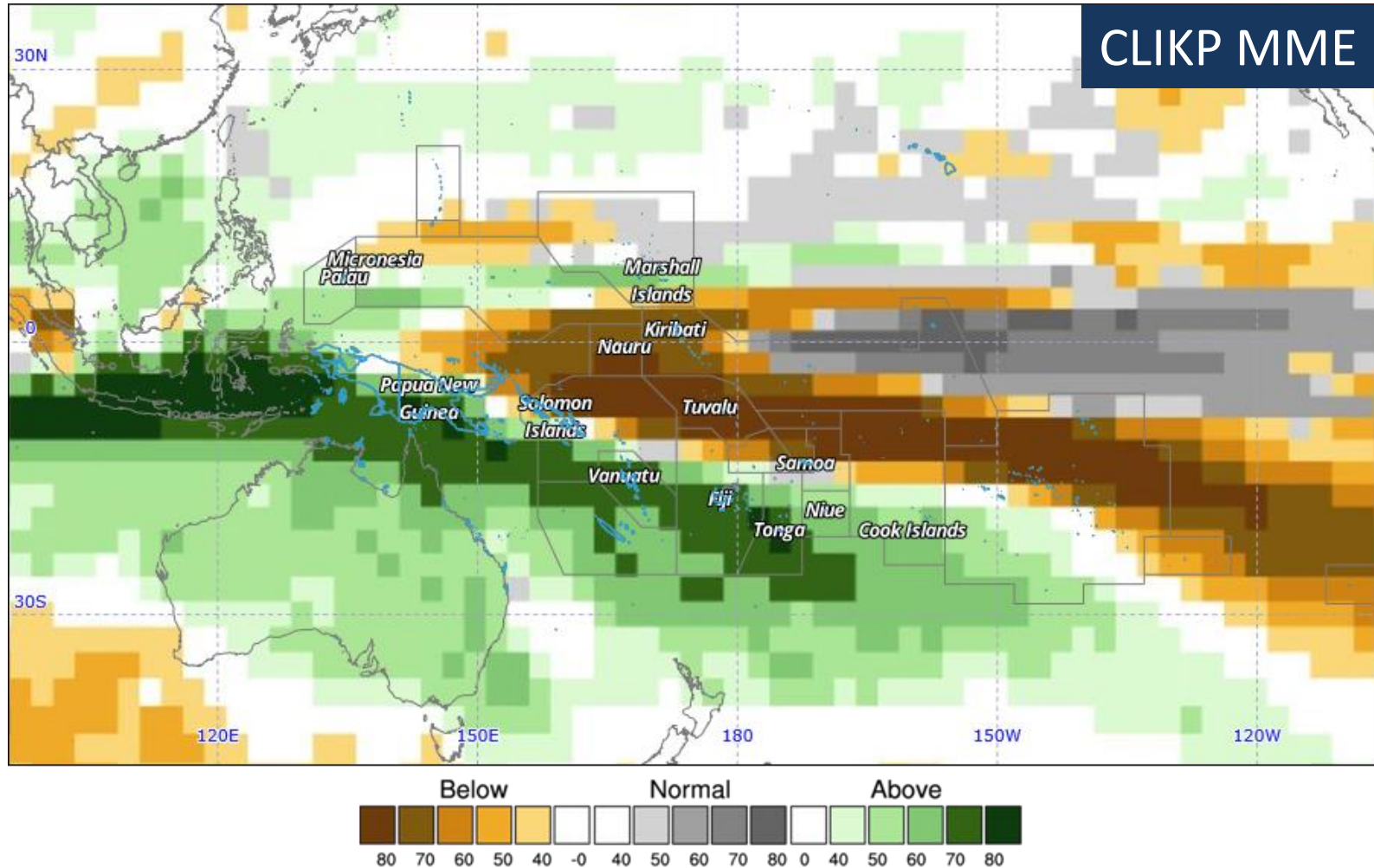


# Model Rainfall Predictions (SON)

C3S multi-system seasonal forecast    ECMWF/Met Office/Météo-France/CMCC/DWD/NCEP/JMA/ECCC  
Prob(most likely category of precipitation)    SON 2022  
Nominal forecast start: 01/08/22  
Unweighted mean



# Model Rainfall Predictions (SON)



Year: 2022, Season: SON, Lead Month: 3, Method: GAUS

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

Generated using CLIK® (2022-9-7)

© APEC Climate Center



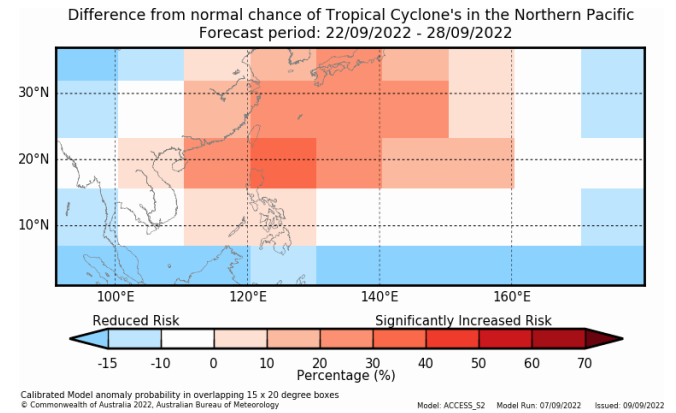
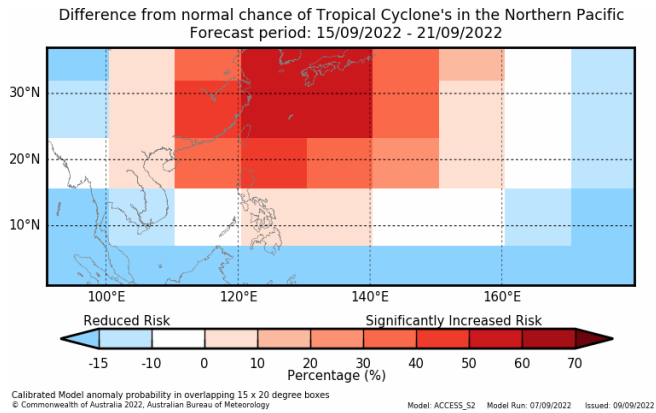
# Model Rainfall Predictions (SON)

| September to November 2022 |             |             |             |
|----------------------------|-------------|-------------|-------------|
|                            | ACCESS-S    | C3S         | CLIKP       |
| 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               | Dark Blue   | Dark Blue   | Dark Blue   |
| Fiji East                  | Dark Blue   | Dark Blue   | Dark Blue   |
| Fiji North                 | Dark Blue   | Light Green | Dark Blue   |
| Fiji Rotuma                | Light Grey  | Orange      | Orange      |
| FSM West                   | Dark Red    | Orange      | Light Green |
| FSM Central                | Dark Red    | Orange      | Light Green |
| FSM East                   | Dark Red    | Orange      | Light Green |
| Kiribati West              | Dark Red    | Dark Red    | Dark Red    |
| Kiribati Central           | Dark Red    | Dark Red    | Dark Red    |
| Kiribati East              | Dark Red    | Dark Red    | Light Grey  |
| RMI North                  | Light Grey  | Light Grey  | Light Grey  |
| RMI Central                | Light Green | Light Green | Light Green |
| RMI South                  | Dark Red    | Dark Red    | Orange      |
| Nauru                      | Dark Red    | Dark Red    | Dark Red    |
| Niue                       | Light Green | Light Green | Light Green |
| Palau                      | Light Green | Light Green | Light Green |
| PNG Momase                 | Orange      | Light Green | Light Green |
| PNG Is                     | Orange      | Orange      | Orange      |
| PNG South                  | Dark Blue   | Dark Blue   | Dark Blue   |
| PNG Highlands              | Dark Blue   | Dark Blue   | Dark Blue   |
| Samoa                      | Light Grey  | Orange      | Light Grey  |
| Solomon Is West            | Light Green | Dark Red    | Orange      |
| Solomon Is Central         | Dark Blue   | Orange      | Light Green |
| Solomon Is East            | Light Green | Light Green | Orange      |
| Tonga North                | Light Green | Light Green | Light Grey  |
| Tonga Central              | Light Green | Light Green | Dark Blue   |
| Tonga South                | Light Green | Light Green | Dark Blue   |
| 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              | Dark Blue   | Dark Blue   | Light Green |
| Vanuatu South              | Dark Blue   | Dark Blue   | Light Green |

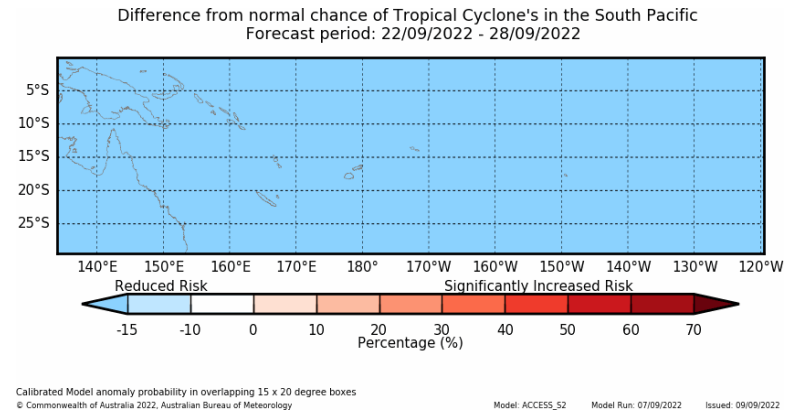
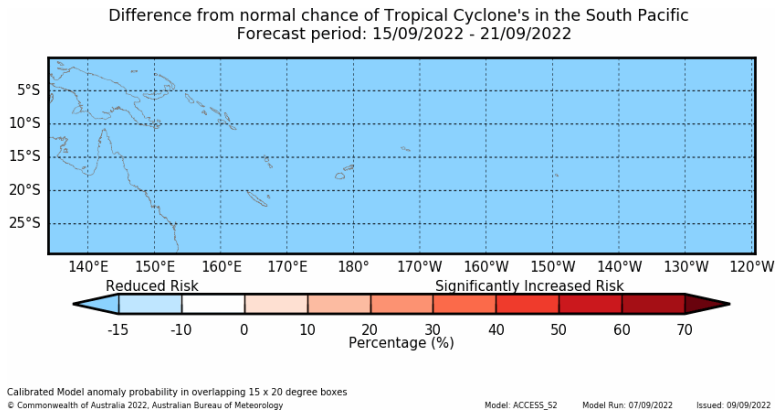
|              | 41-50%      | 51-60%      | 61-70%      | 71-80%      | 81-90%     | >90%       |
|--------------|-------------|-------------|-------------|-------------|------------|------------|
| Below normal | Yellow      | Orange      | Dark Orange | Red-Orange  | Dark Red   | Dark Red   |
| Near-normal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

# TCC Outlooks

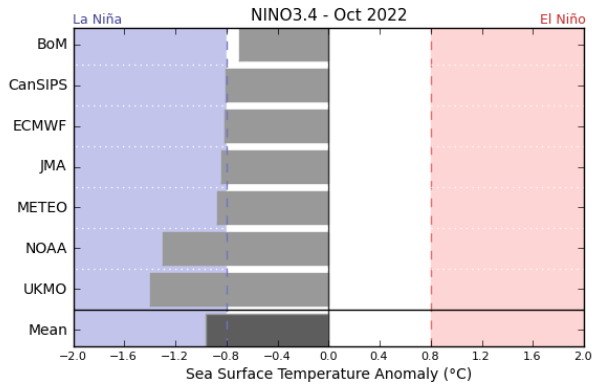
## Northwest Pacific



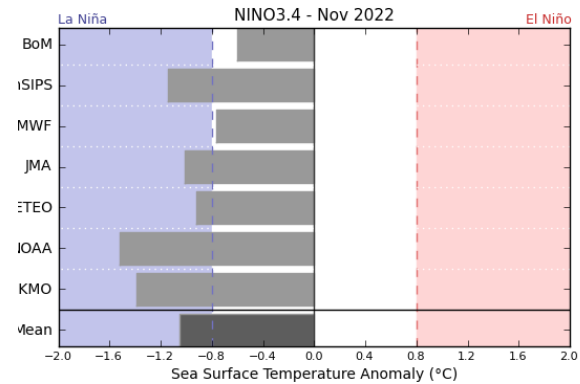
## South Pacific



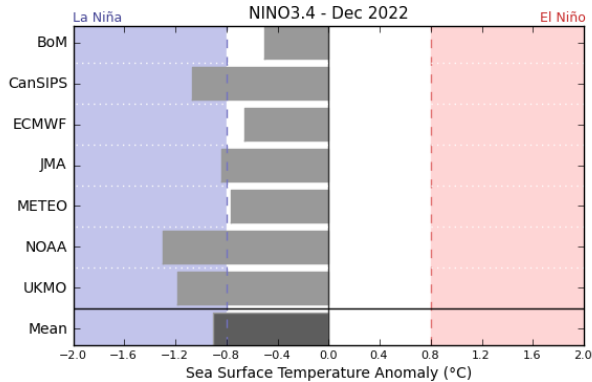
# Climate Model Summary



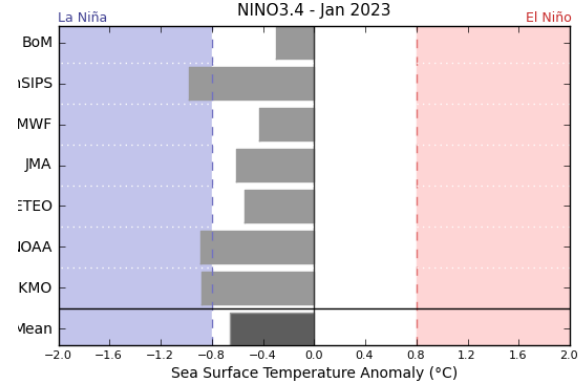
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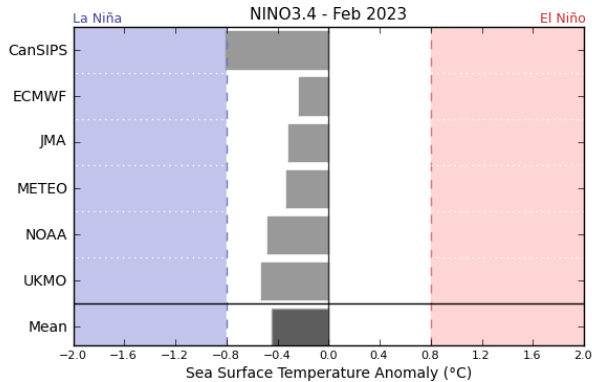
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