ENSO update - OCOF 156

15 September 2020

ENSO Update

Climate Driver Update

Climate drivers in the Pacific, Indian and Southern oceans and the Tropics

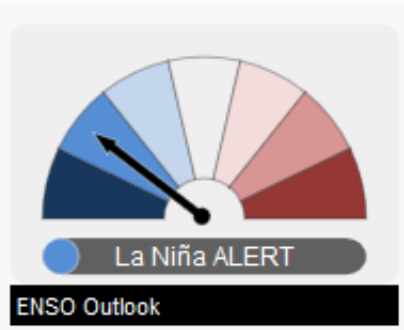
Issued **1 September 2020** Next issue **15 September 2020**

Overview | Pacific Ocean | Indian Ocean | Southern Ocean | Tropics

Summary | Sea surface

La Niña and negative Indian Ocean Dipole remain likely during spring

Recent cooling of the surface of the tropical Pacific Ocean, changes in tropical weather patterns, and continued ocean cooling forecast by climate models suggest La Niña could become established in spring 2020.

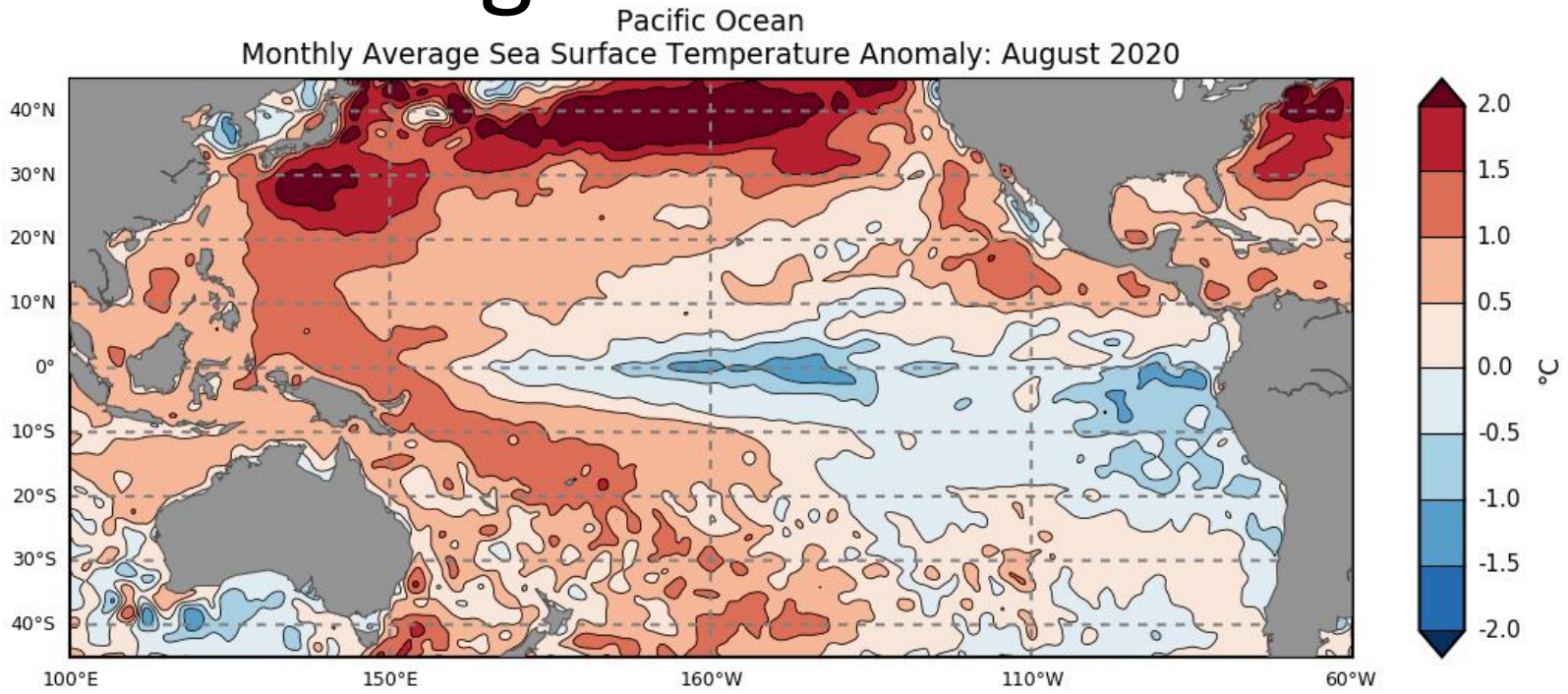


The Bureau's ENSO Outlook remains at La Niña ALERT. This means the chance of La Niña forming in 2020 is around 70%—roughly three times the average likelihood.

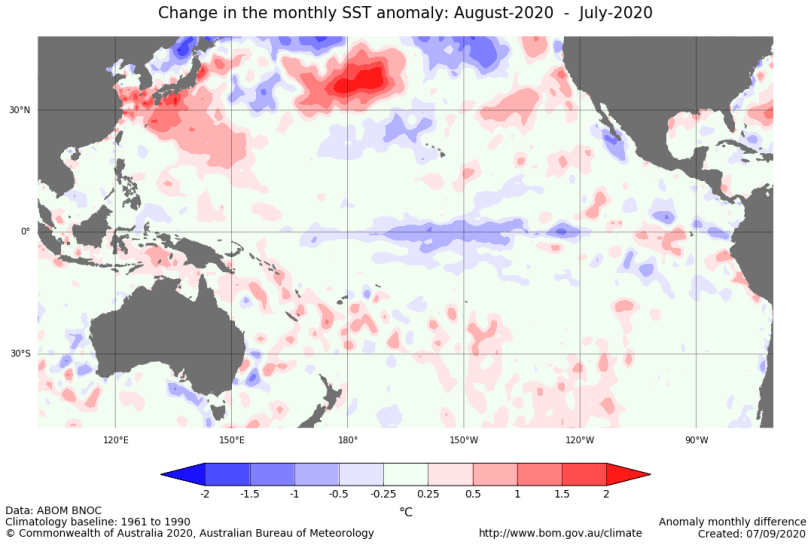
While most key indicators remain within ENSO-neutral range, there have been further signs of La Niña development in the past fortnight. The central tropical Pacific Ocean has continued to cool and trade winds remain stronger than average, while the Southern Oscillation Index (SOI) has exceeded La Niña thresholds in recent days. Equatorial cloudiness near the Date Line also remains below average.

All of the surveyed international climate models surveyed anticipate further cooling of the tropical Pacific Ocean. Five of the eight models reach or exceed La Niña thresholds during October, with six models indicating that if La Niña forms it is likely to persist into December.

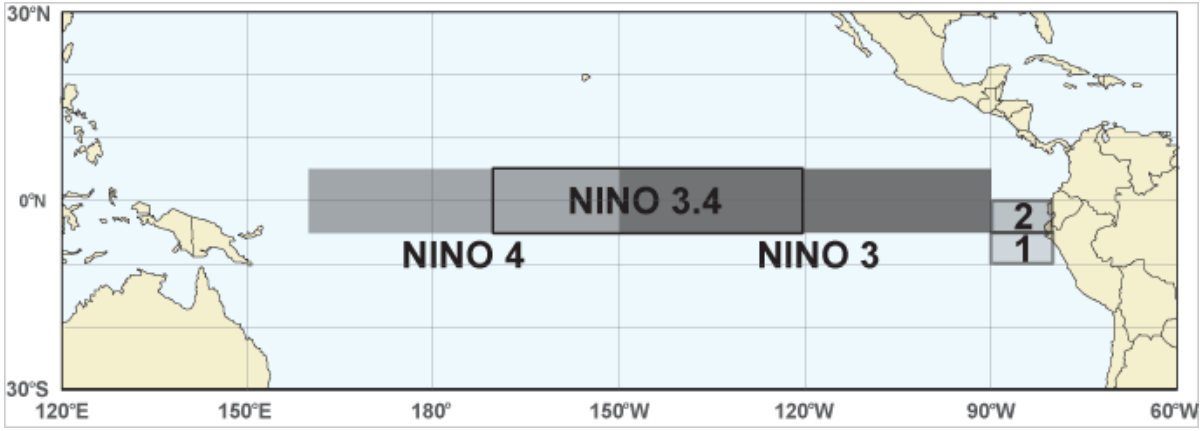
August 2020 SSTs



Geoscience Energy and Maritime Division, COSPPac SPP



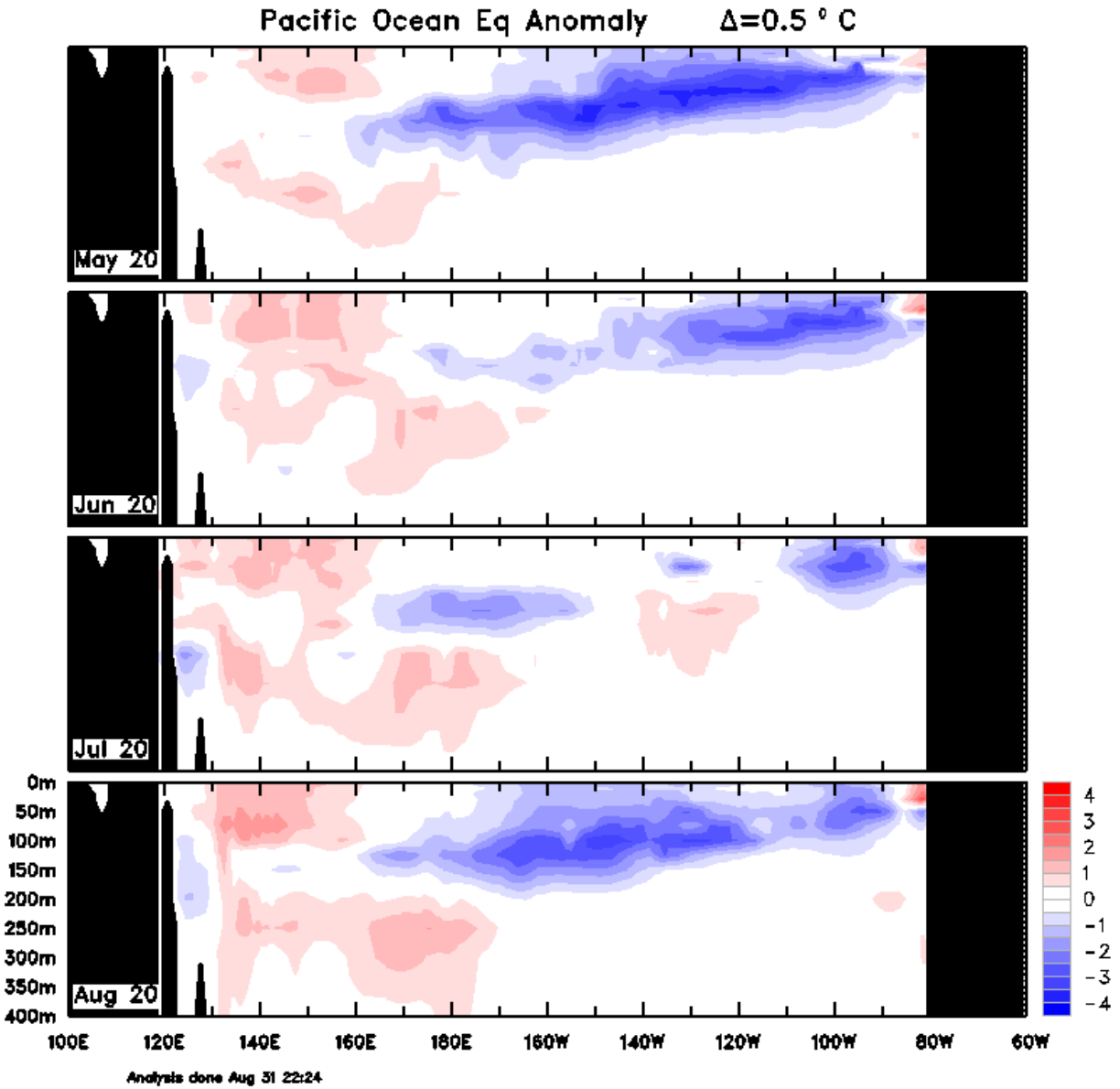
NINO SST anomalies (°C)



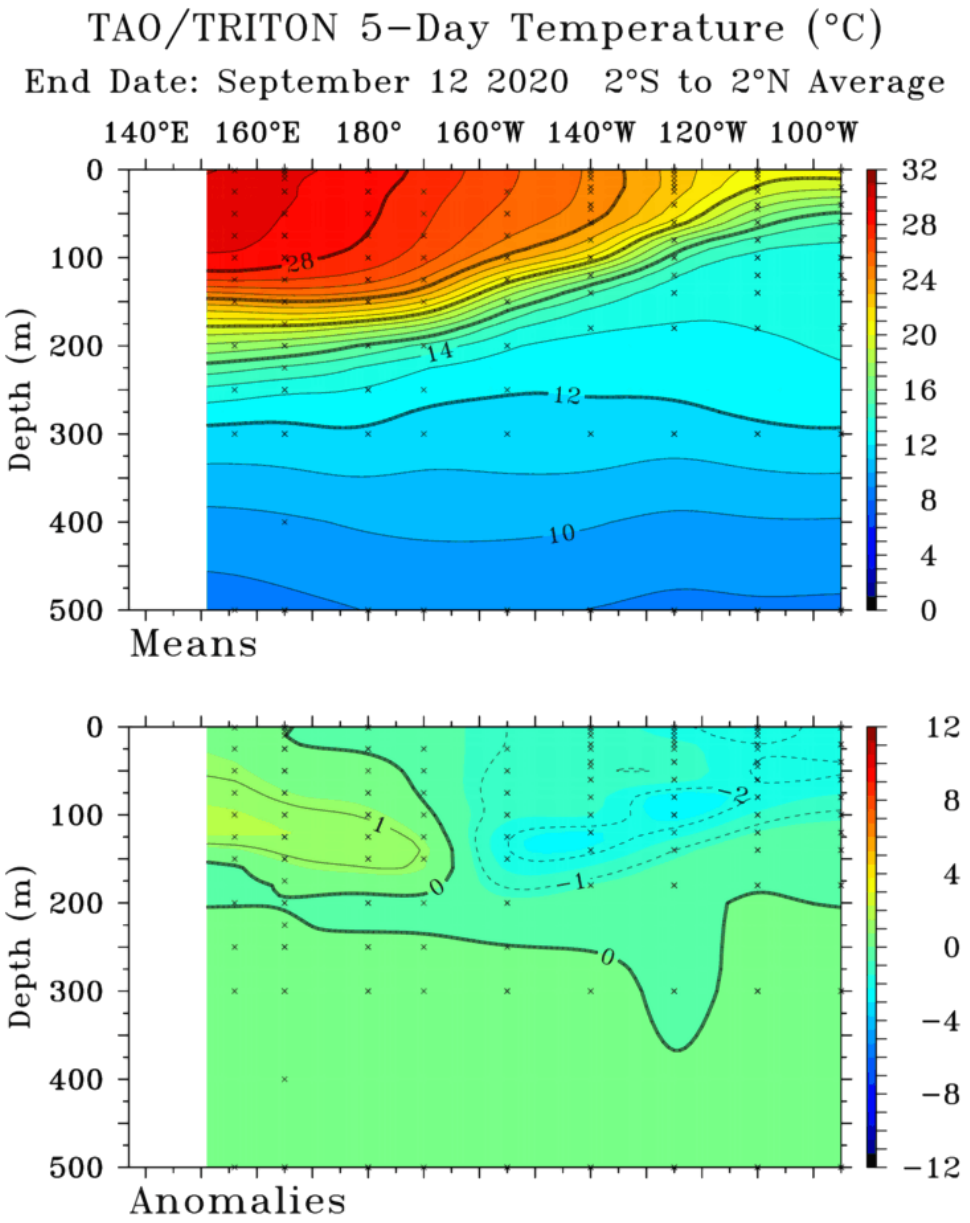
Index	July 2020	Aug 2020	Latest weekly
NINO3	–0.3	–0.4	–0.8
NINO3.4	0.0	–0.4	–0.7
NINO4	+0.2	–0.1	–0.2

Weekly data for the week ending 13/09/2020

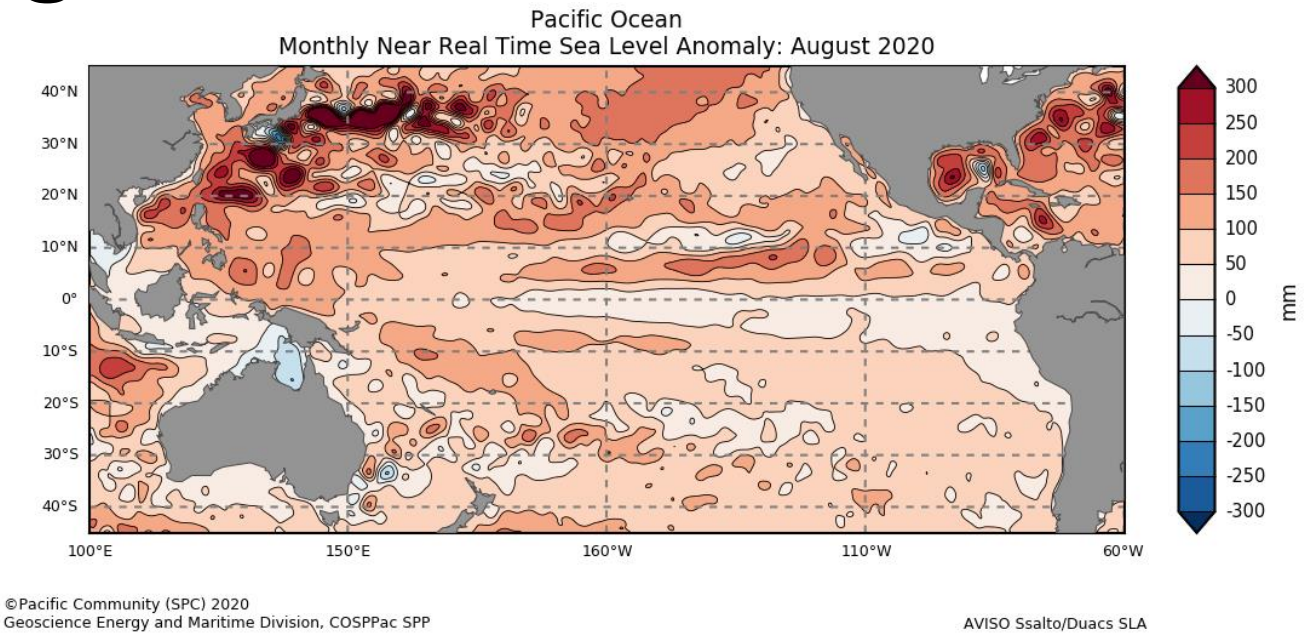
Equatorial Pacific sub-surface profile
Bureau of Meteorology

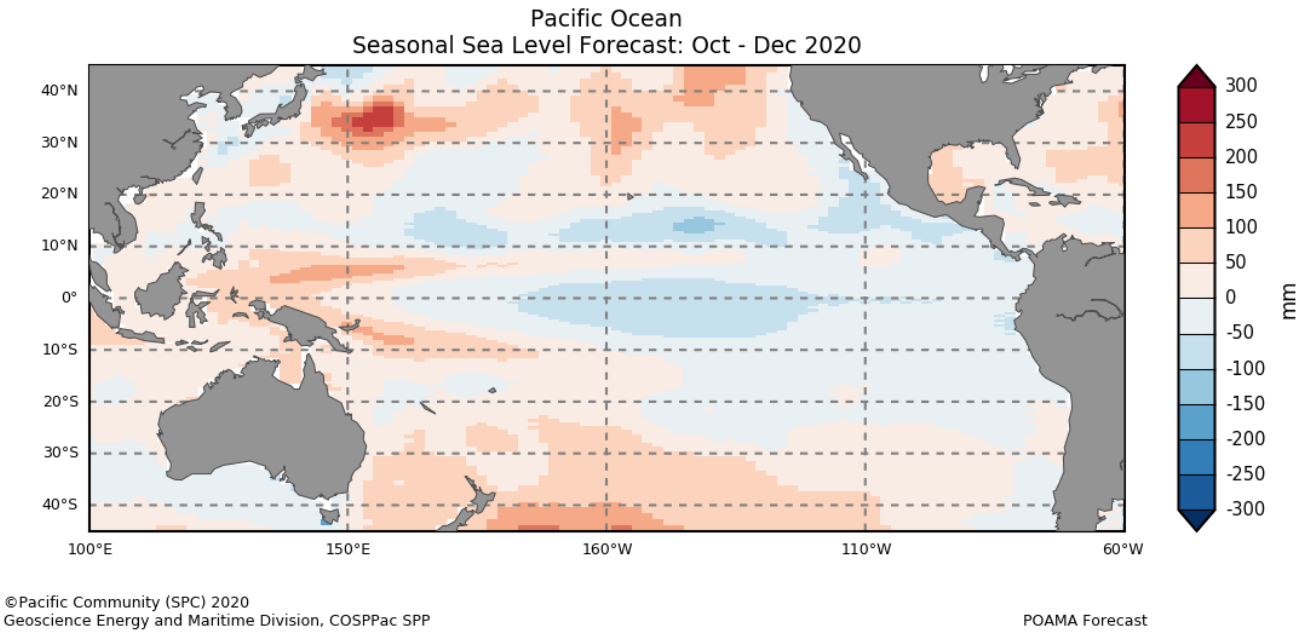


Equatorial Pacific sub-surface profile

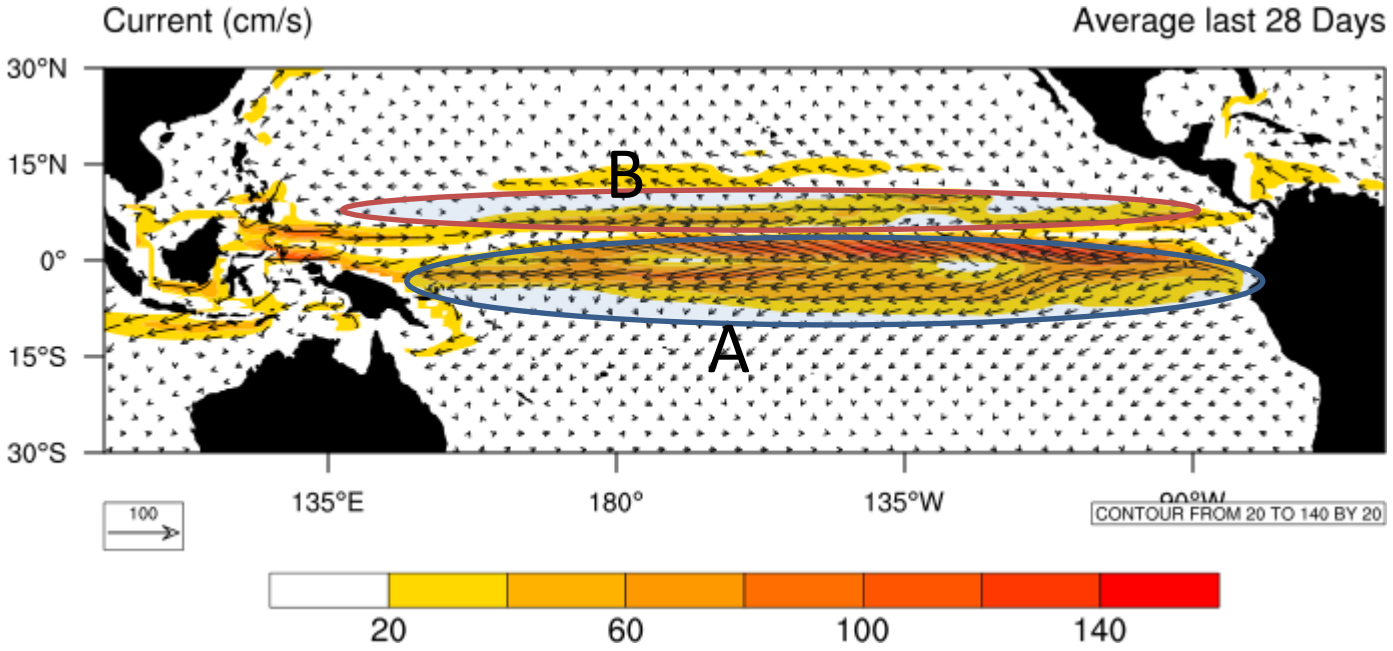


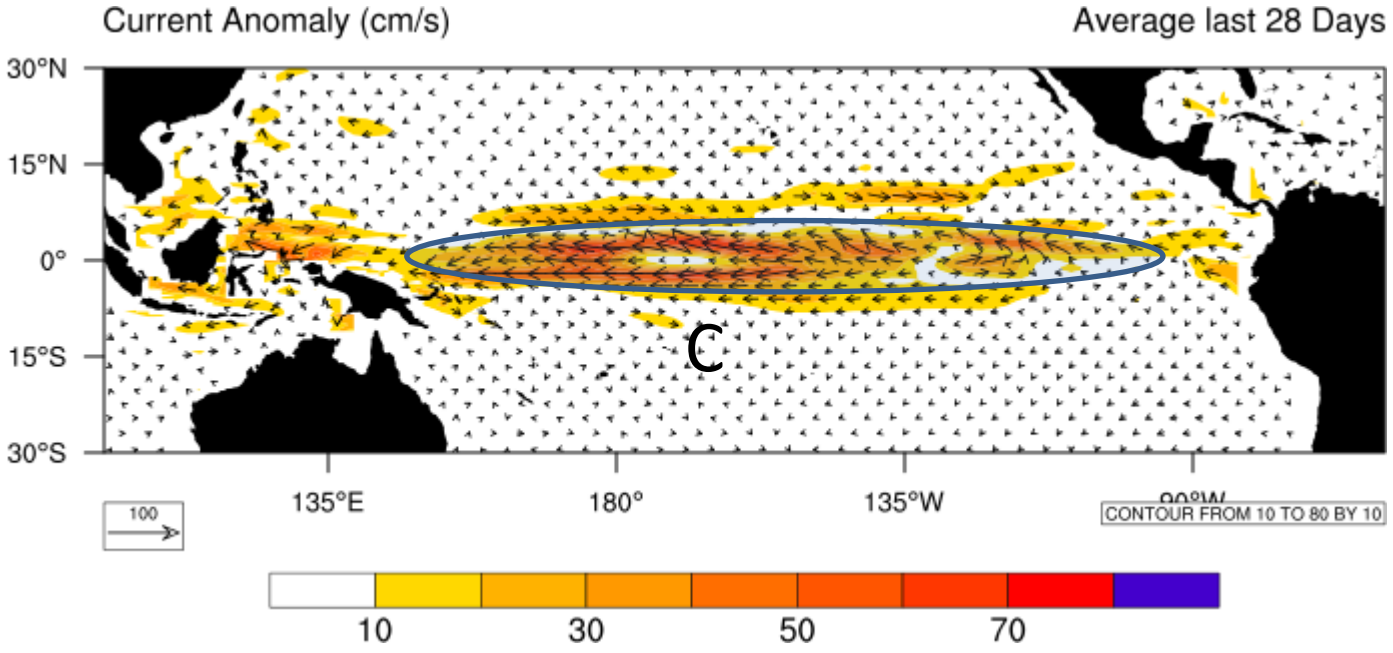
August 2020 Sea Level Anomaly



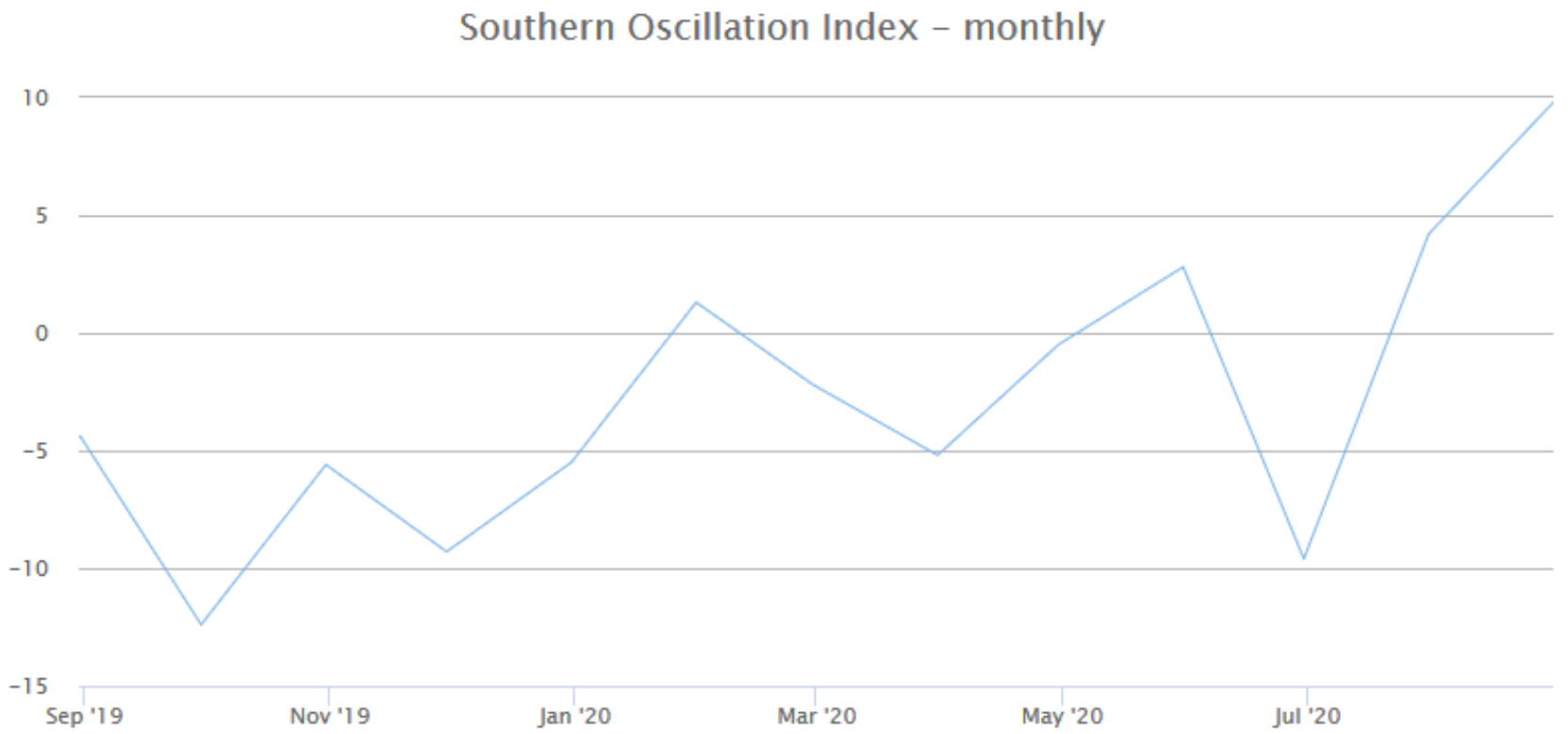


Ocean Currents at 10 September 2020





Southern Oscillation Index

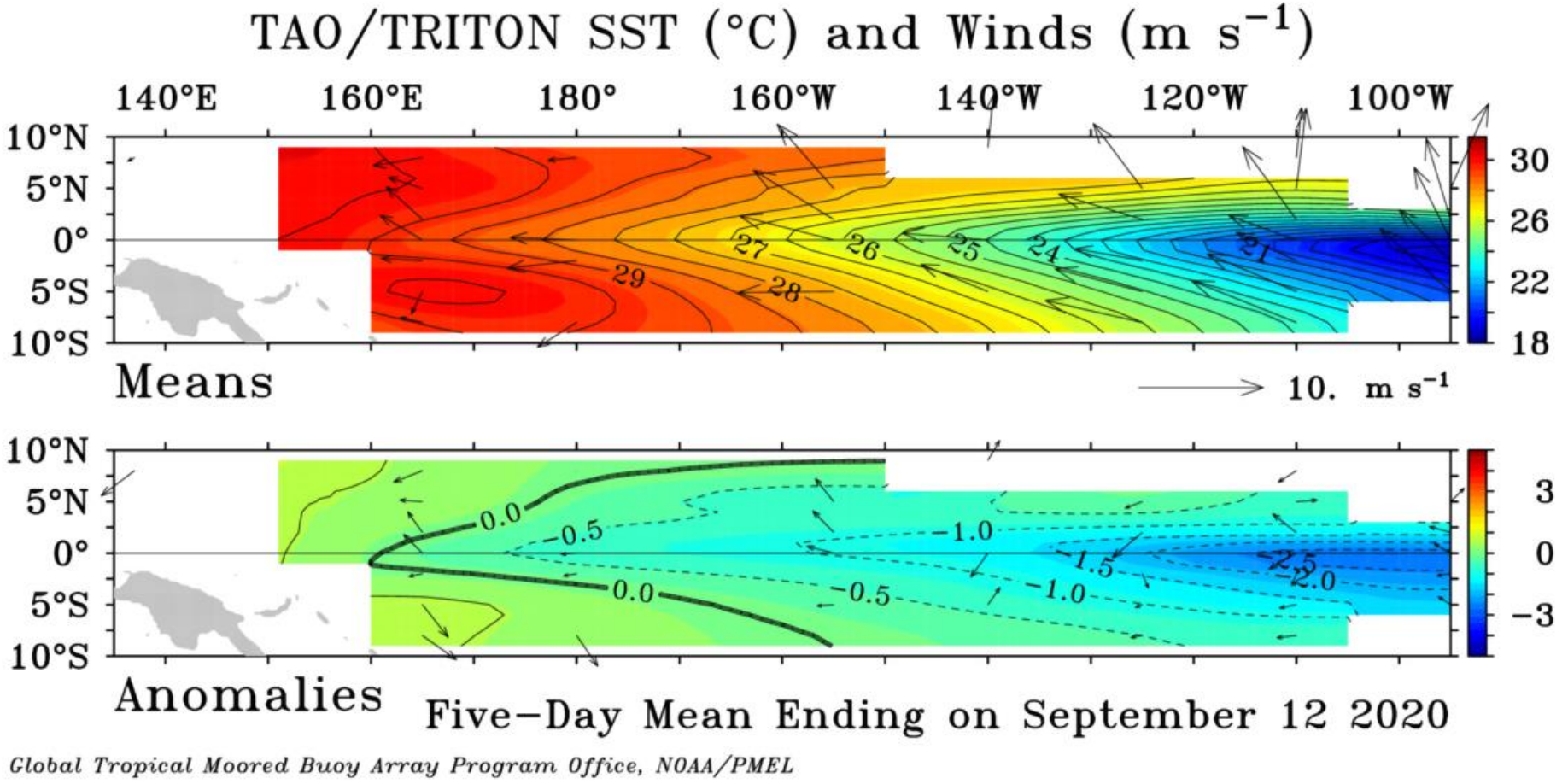


Southern Oscillation Index monthly data

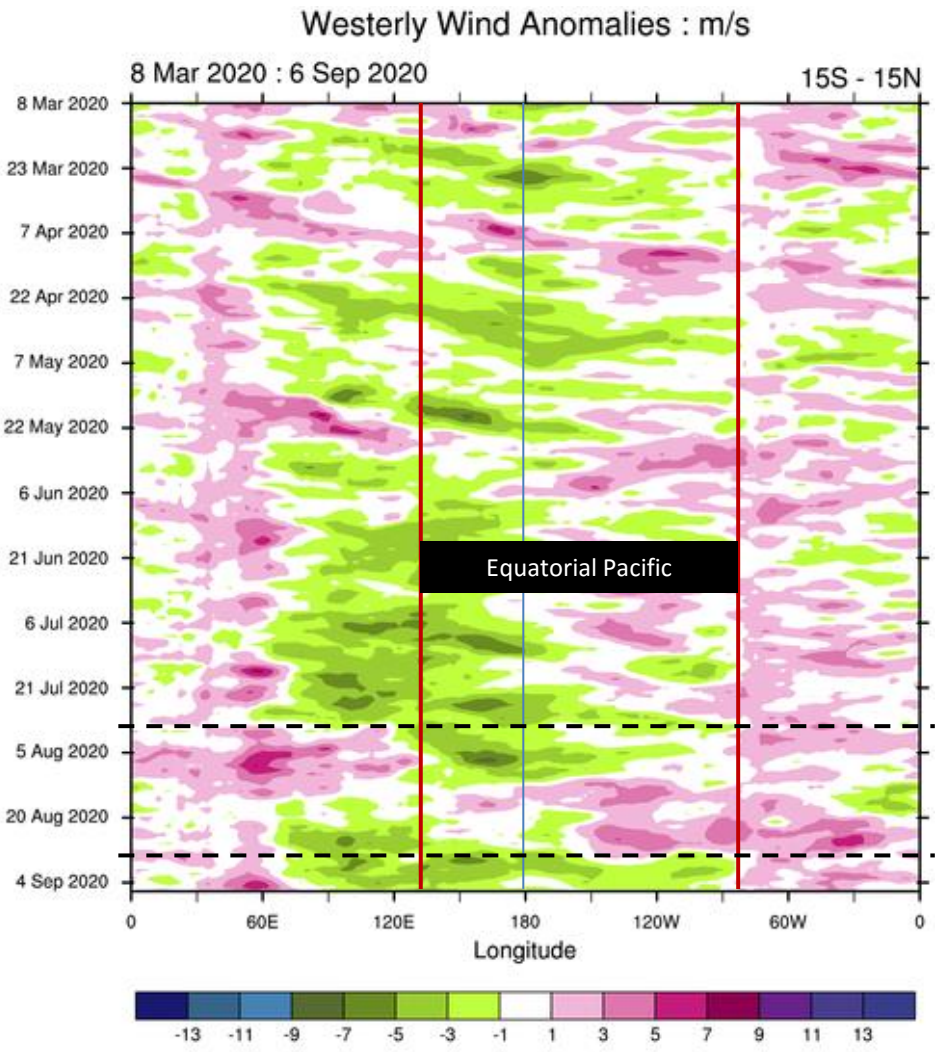
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2020	+1.3	−2.2	−5.2	−0.5	+2.8	−9.6	+4.2	+9.8	-	-	-	-
2019	−0.6	−13.5	−6.8	−1.3	−9.0	−10.4	−5.6	−4.4	−12.4	−5.6	−9.3	−5.5

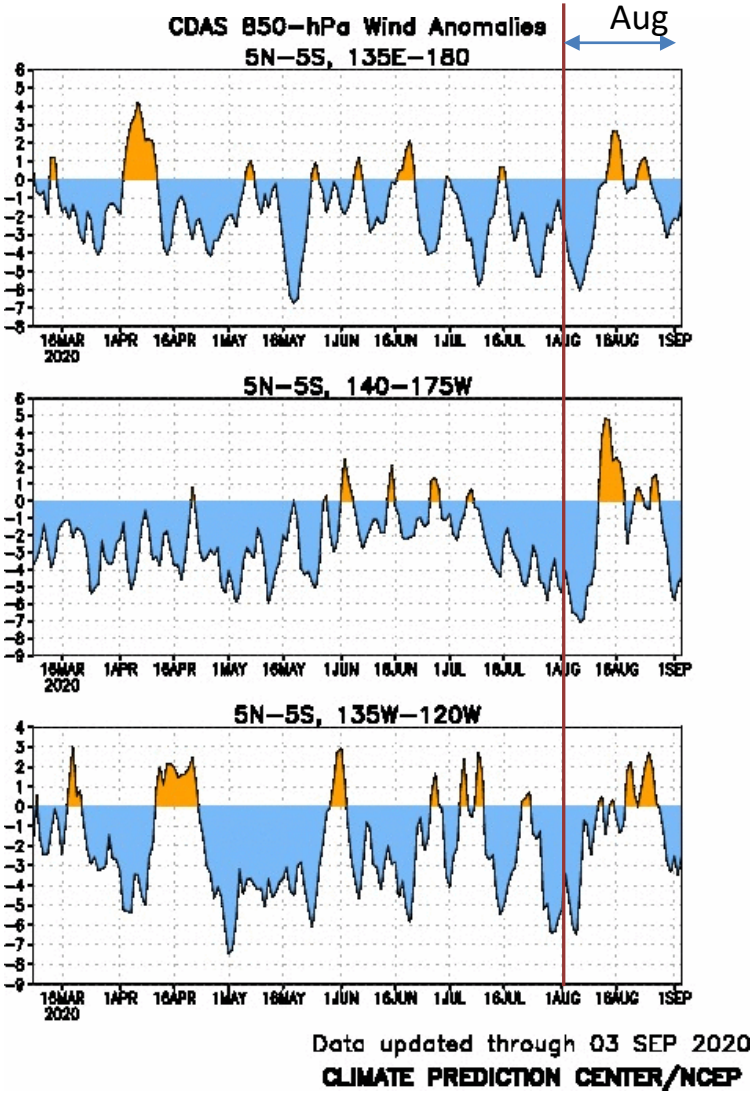
At 12 September 2020: 30-day SOI = +10; 90-day SOI = +5

Equatorial Trade Winds

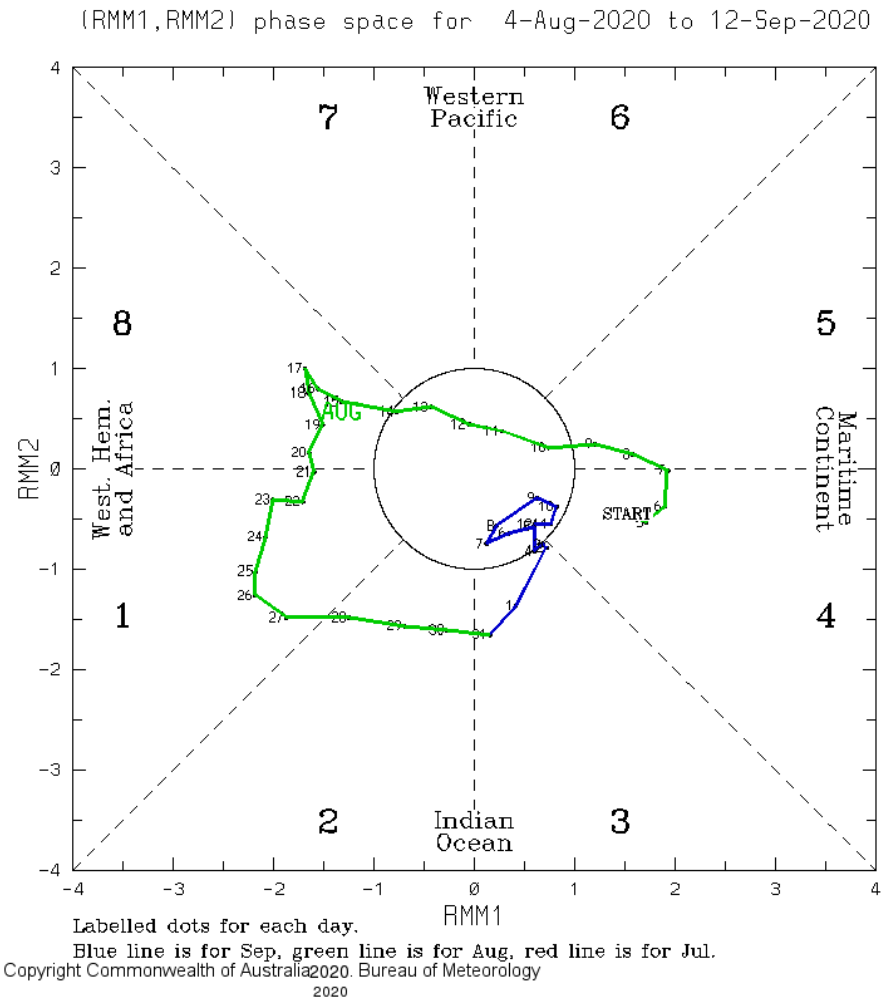


Equatorial Trade Winds

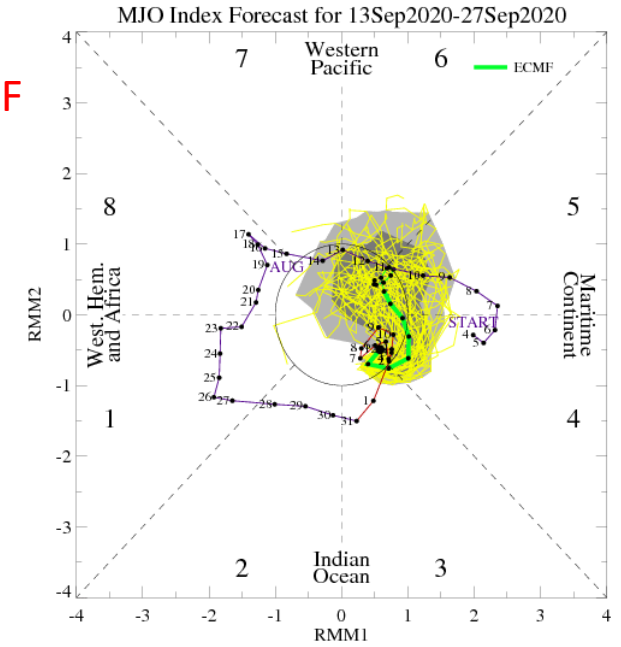




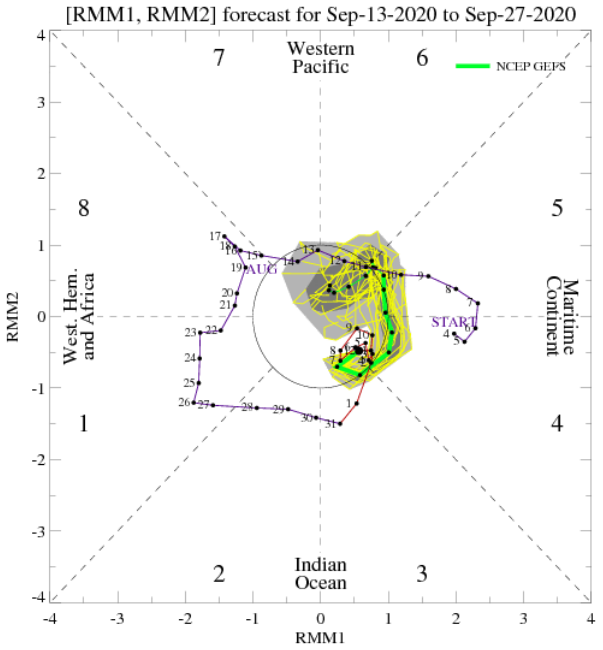
Madden-Julian Oscillation



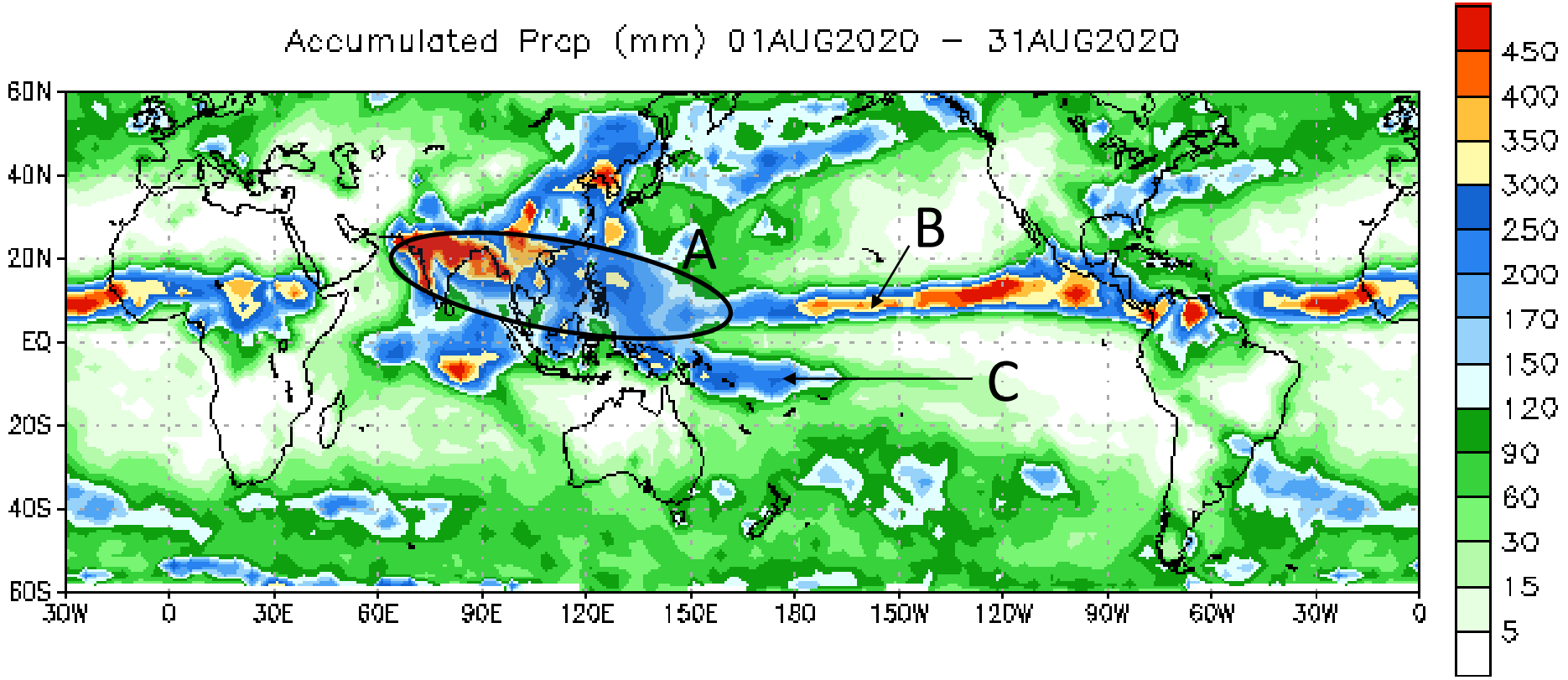
ECMWF



NCEP

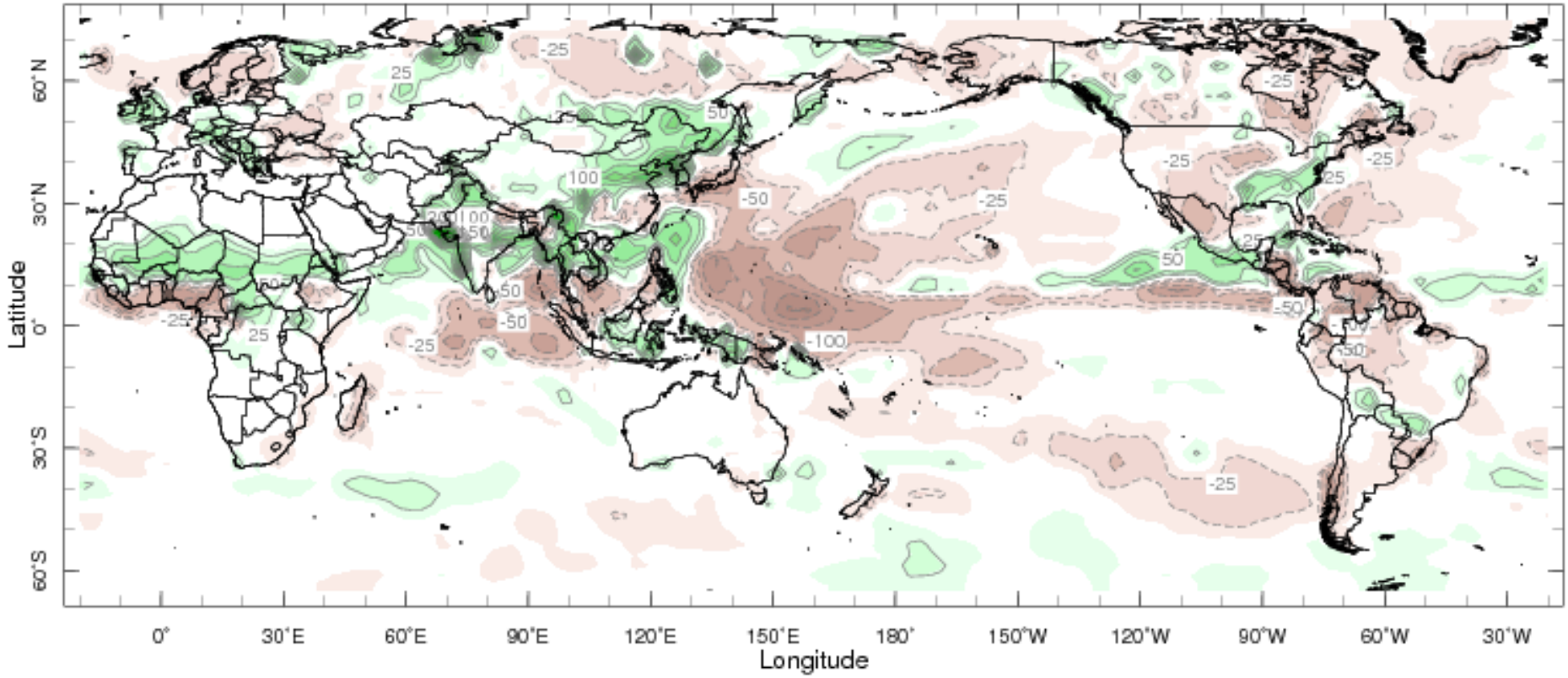


Satellite Rainfall



Data Source: NCEP CMAP Precipitation

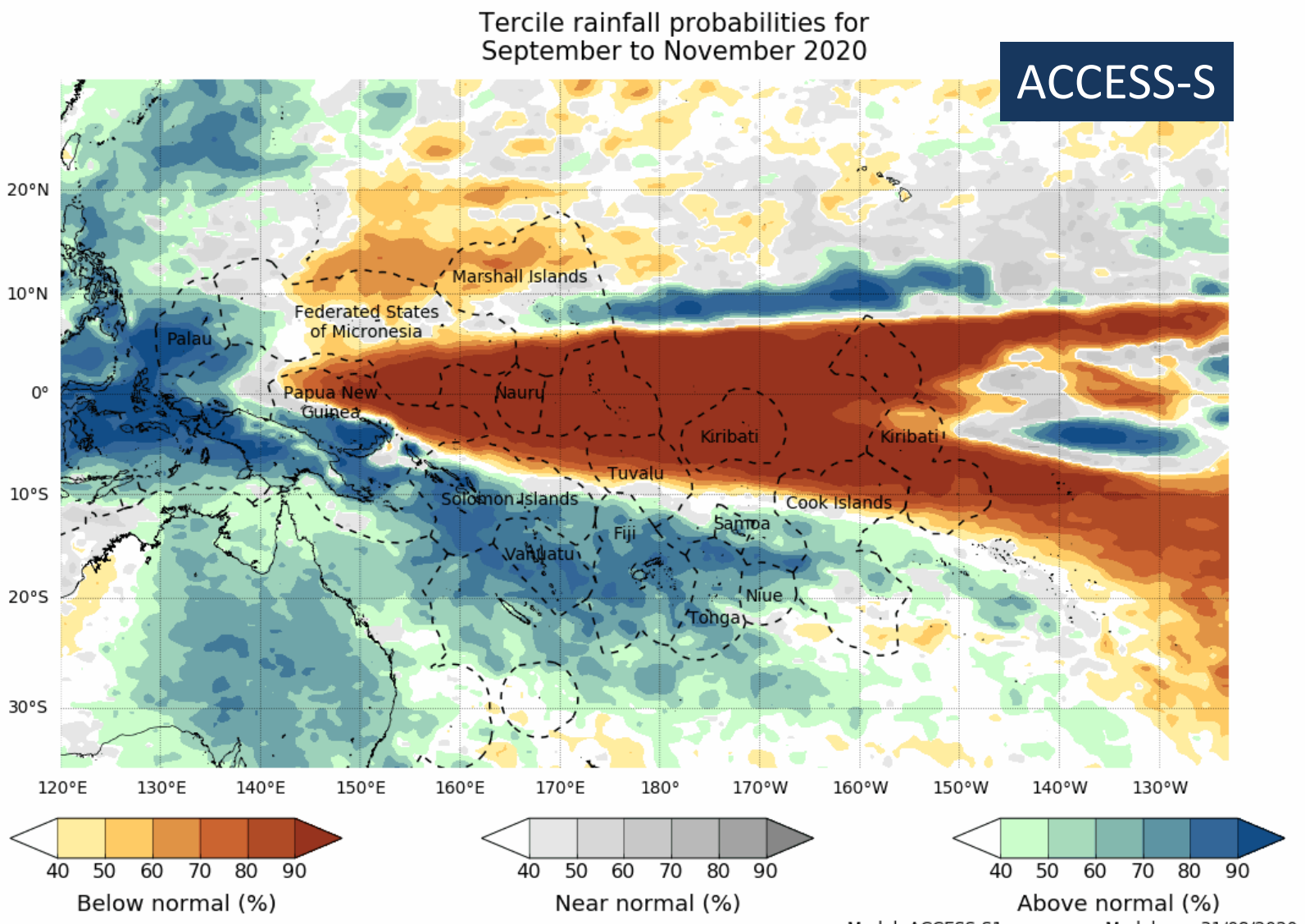
Satellite Rainfall Anomaly



Aug 2020

Units = mm per month

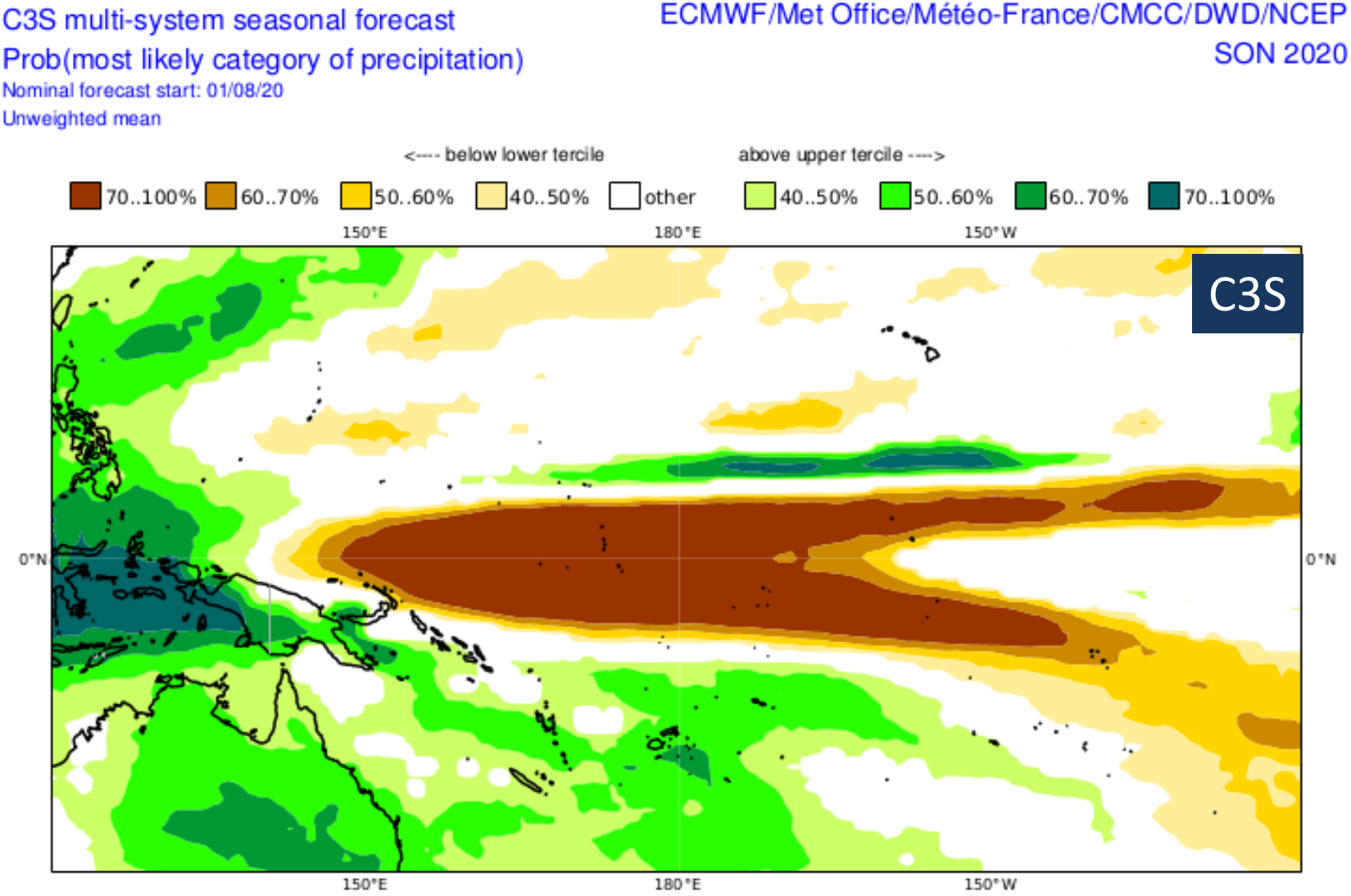
Model Rainfall Predictions (SON)



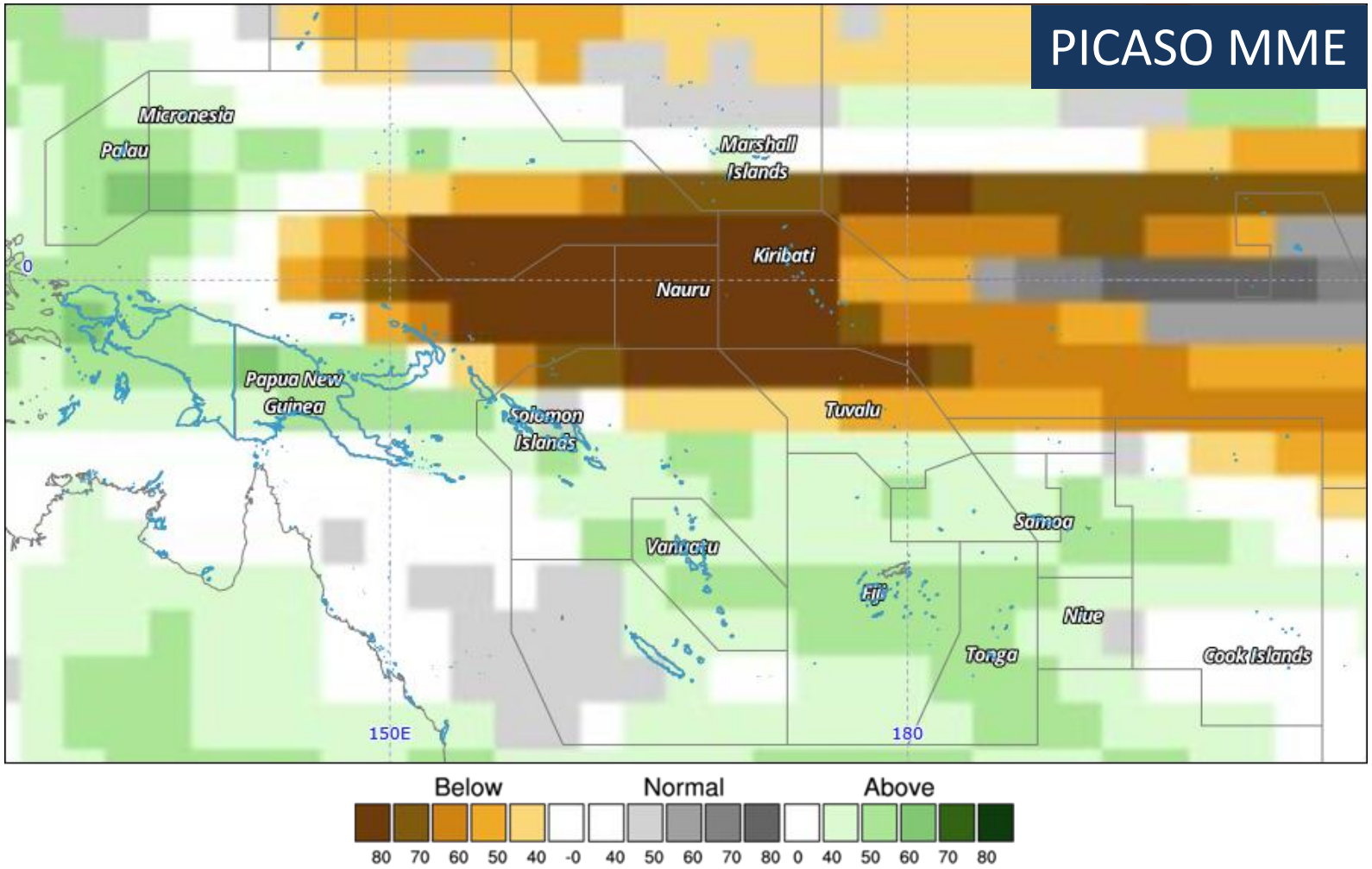
Model: ACCESS-S1 Model run: 31/08/2020
Base period: 1990-2012 Issued: 03/09/2020

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)



Model Rainfall Predictions (SON)



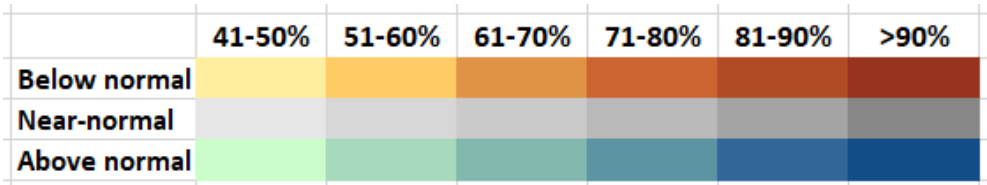
Year: 2020, Season: SON, Lead Month: 3, Method: GAUS

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

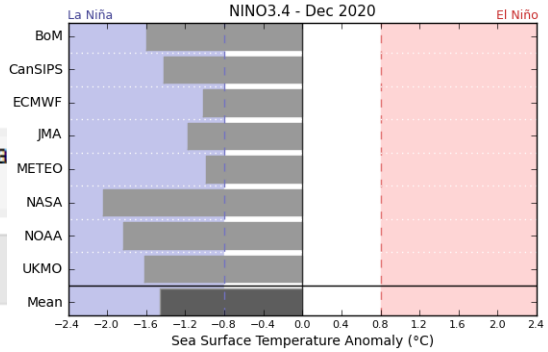
Generated using CLIK® (2020-9-8)

Model Rainfall Predictions (SON)

	September-November 2020		
	ACCESS-S	C3S	PICASO
Cook Is Nth			
Cook Is Sth			
Fiji West			
Fiji Central			
Fiji East			
Fiji Nth			
Fiji Rotuma			
Kiribati West			
Kiribati Central			
Kiribati East			
Marshall Is			
Niue			
Palau			
PNG Momase			
PNG Is			
PNG Sth			
PNG Highlands			
Samoa			
Solomon Is West			
Solomon Is Central			
Solomon Is East			
Tonga Nth			
Tonga Central			
Tonga Sth			
Tuvalu Nth			
Tuvalu Sth			
Vanuatu Nth			
Vanuatu Sth			



Climate Model Summary for October to February 2021



Issued **14 September 2020** Next issue **12 October 2020**

Australian climate is influenced by temperature patterns in the Pacific and Indian Oceans. This page provides informa
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

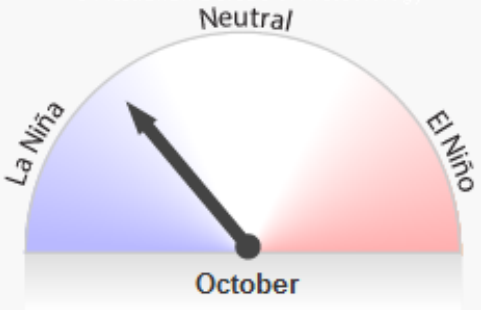
La Niña increasingly likely for remainder of 2020

The El Niño–Southern Oscillation (ENSO) is moving closer to La Niña. The Bureau's La Niña ALERT remains in place, as the tropical Pacific Ocean continues to cool towards values consistent with La Niña. All models now anticipate La Niña thresholds to be exceeded from October, and sustained until the end of 2020, with most extending these values into early 2021. La Niña events typically enhance spring rainfall in northern, central and eastern Australia.

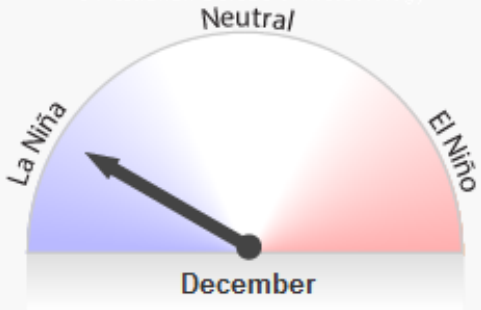
The Indian Ocean Dipole (IOD) is currently neutral. Five of the six surveyed models indicate IOD index values consistent with a negative IOD could develop in October, with three models maintaining these values into November. However, it is unclear at this stage whether the negative values will be sustained for long enough to be considered a negative IOD event. A negative IOD typically brings above average spring rainfall to parts of southern and central Australia.

Further details: Climate Driver Update | Climate Outlooks

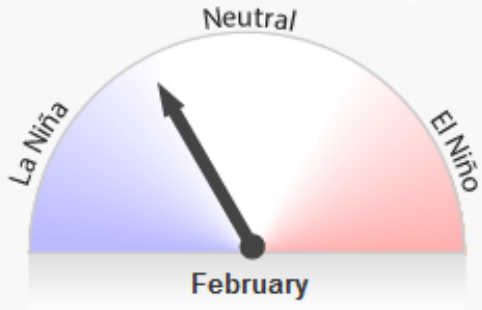
Average of international model outlooks for NINO3.4



SST anomaly: −1.1 °C



SST anomaly: −1.5 °C



SST anomaly: −0.9 °C

Climate Model Summary