

PICOF-14

# Monthly & seasonal outlook for May-October 2024 - atmosphere

**Ben Noll**

Meteorologist

NIWA



# Outline of presentation

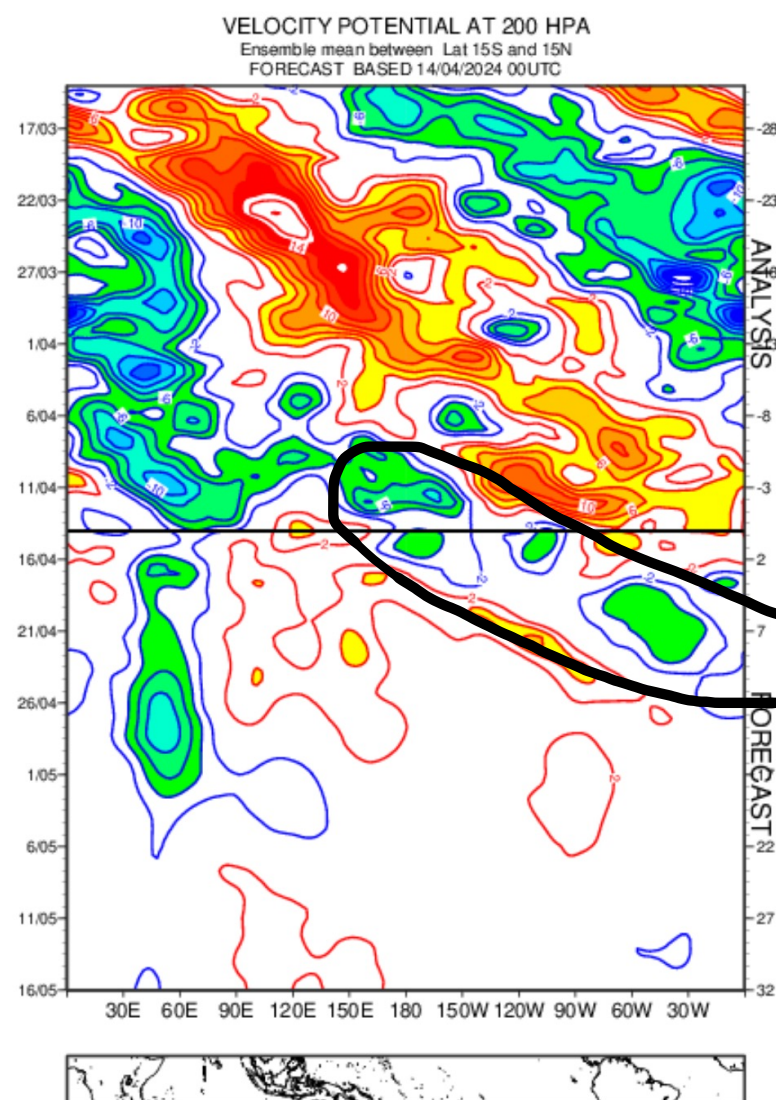
- Comment on intra-seasonal variability (e.g., Madden-Julian Oscillation)
- Quick review of climate drivers for the next six months
- Overview of model guidance & skill: circulation patterns/wind, rain, temperature, including WMO LC LRF-MME (official PICOF outlook)



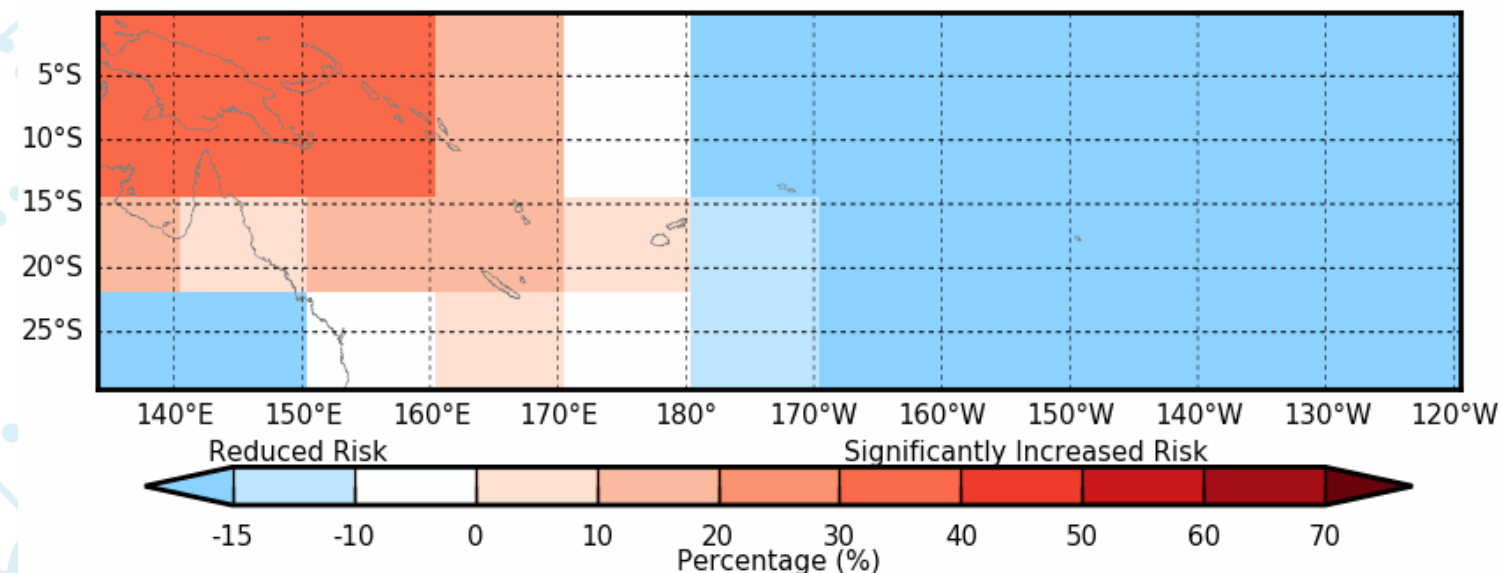


# Active Madden-Julian Oscillation

Time-longitudes sections - Extended range forecast



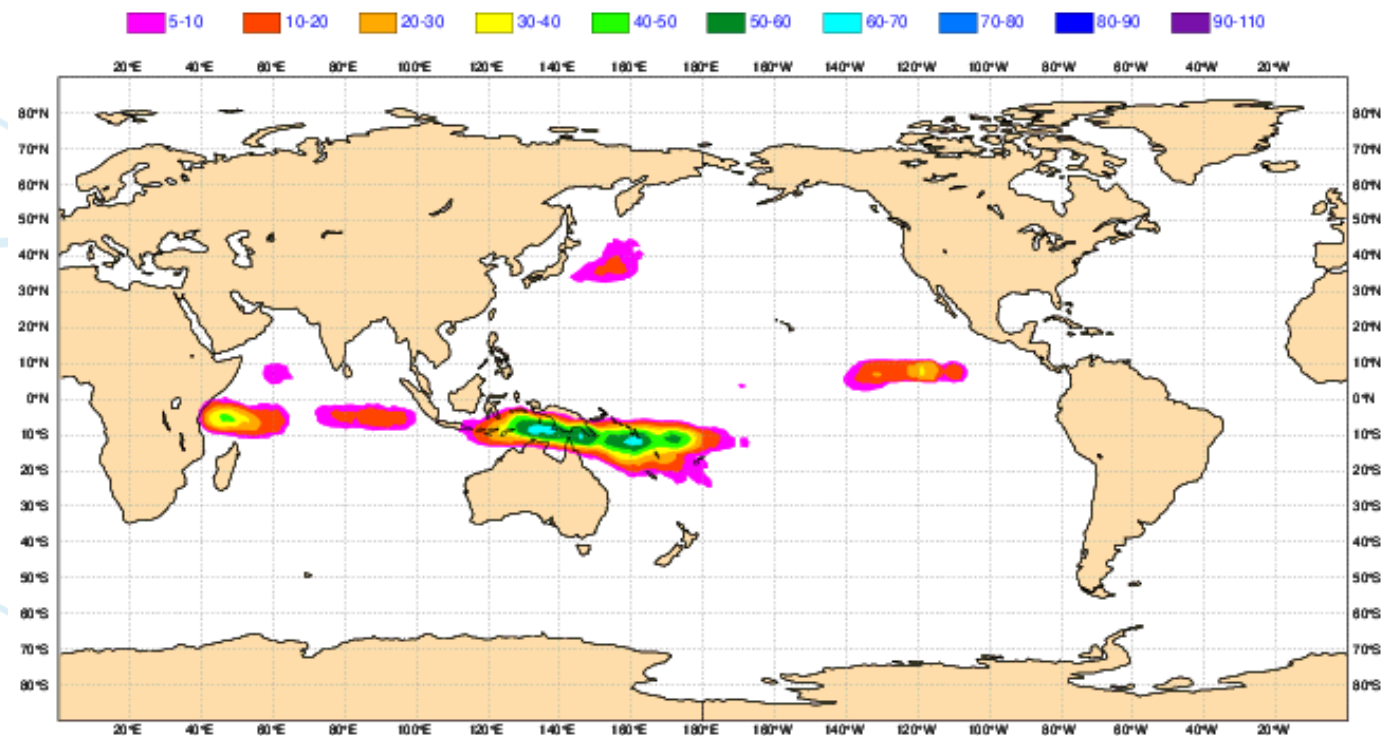
Difference from normal chance of Tropical Cyclone's in the South Pacific  
Forecast period: 20/04/2024 - 26/04/2024



Calibrated Model anomaly probability in overlapping 15 x 20 degree boxes  
© Commonwealth of Australia 2024, Australian Bureau of Meteorology

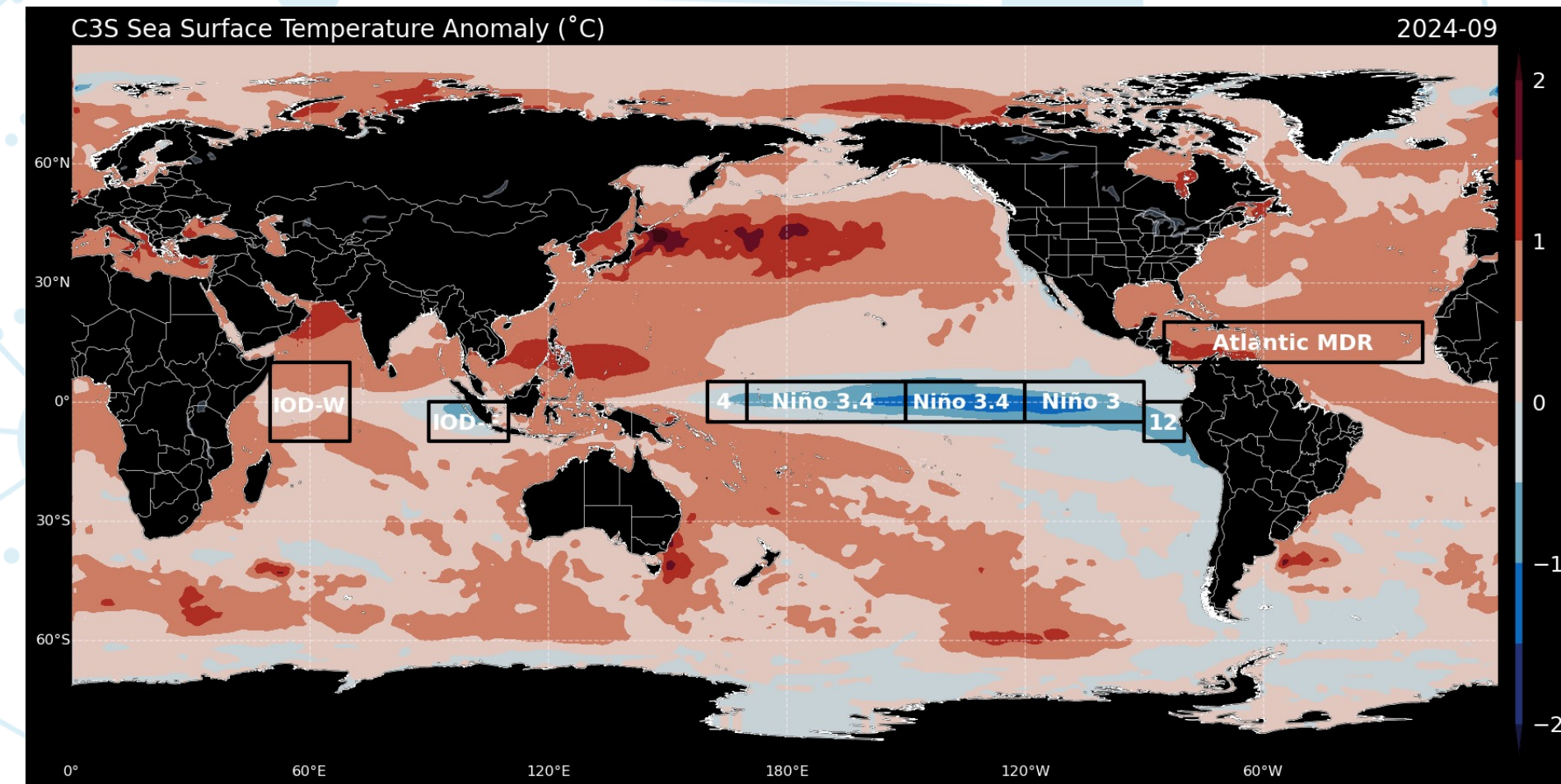
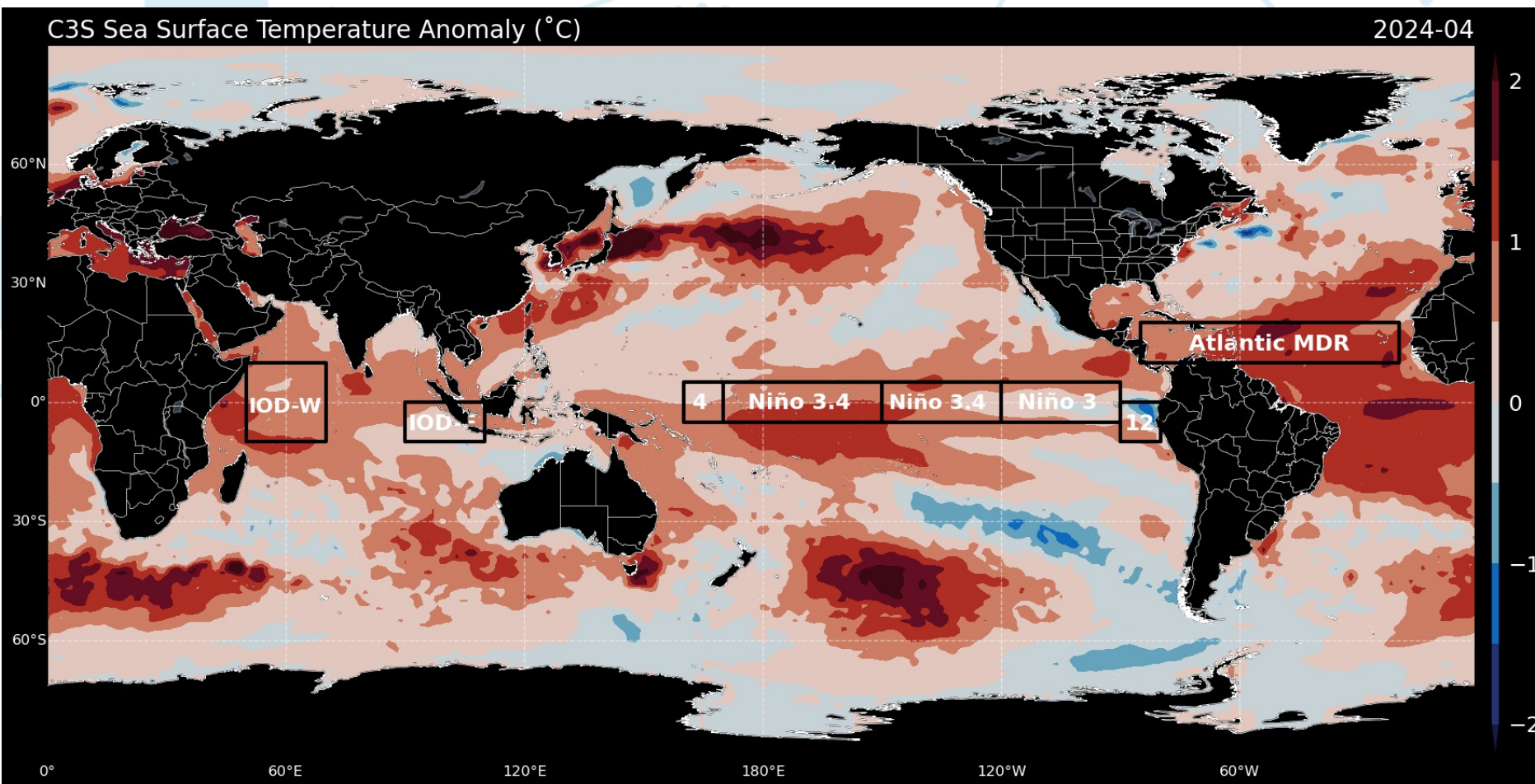
Model: ACCESS\_S2 Model Run: 12/04/2024 Issued: 14/04/2024

Weekly Mean Tropical Cyclone Strike Probability. Date: 20240414 0 UTC t+( 24-192)  
Probability of a TC passing within 300km radius



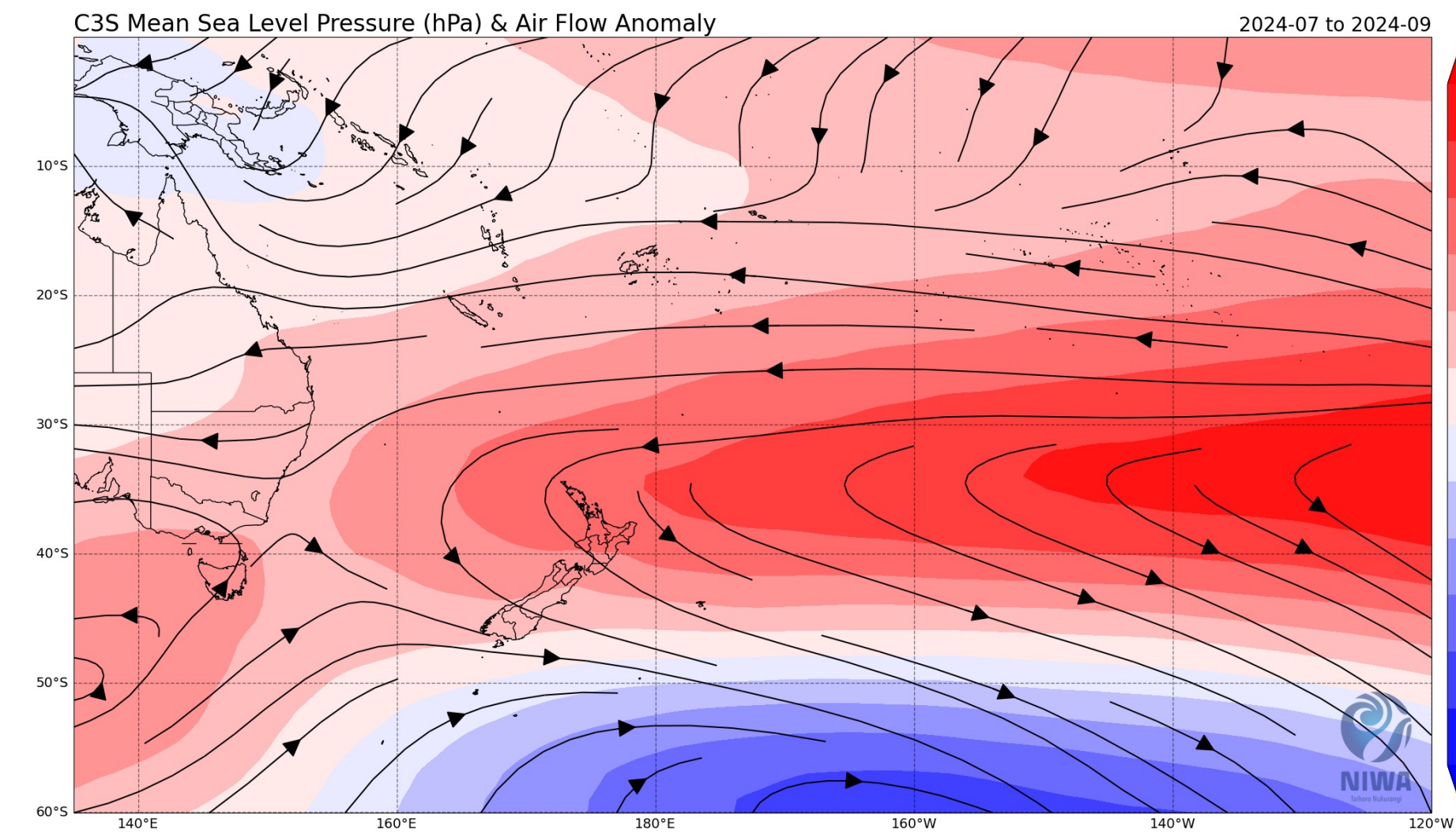
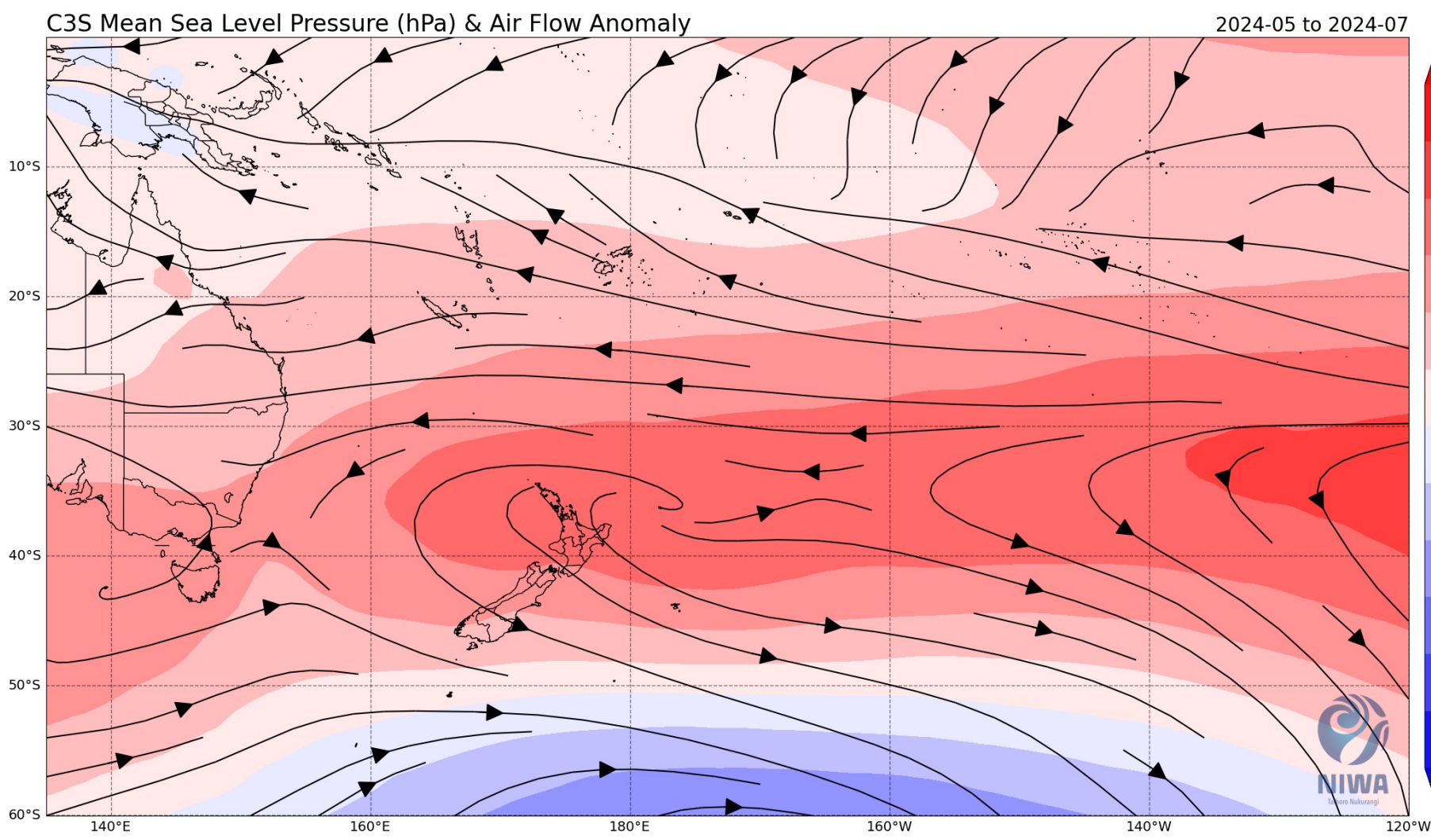


# El Niño → neutral → La Niña (?)





# May-Jul & Jul-Sep circulation patterns: C3S MME





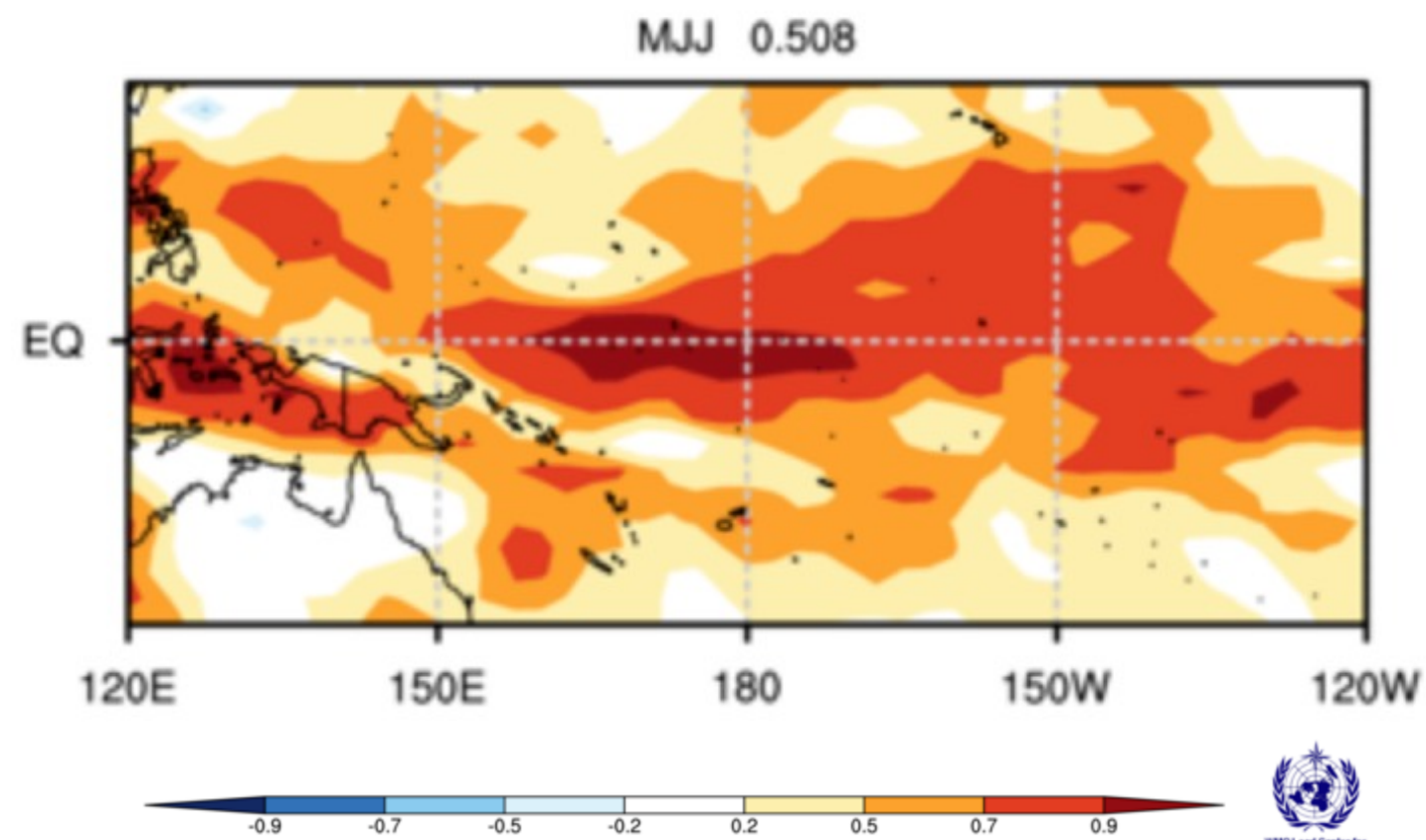
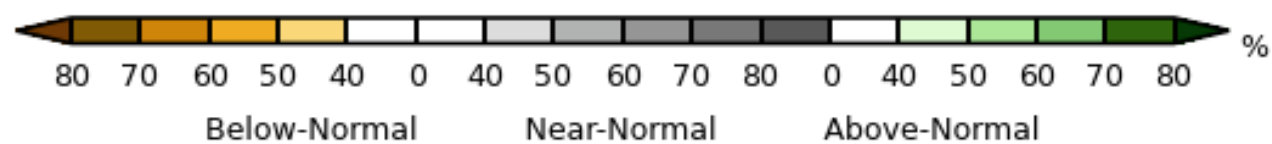
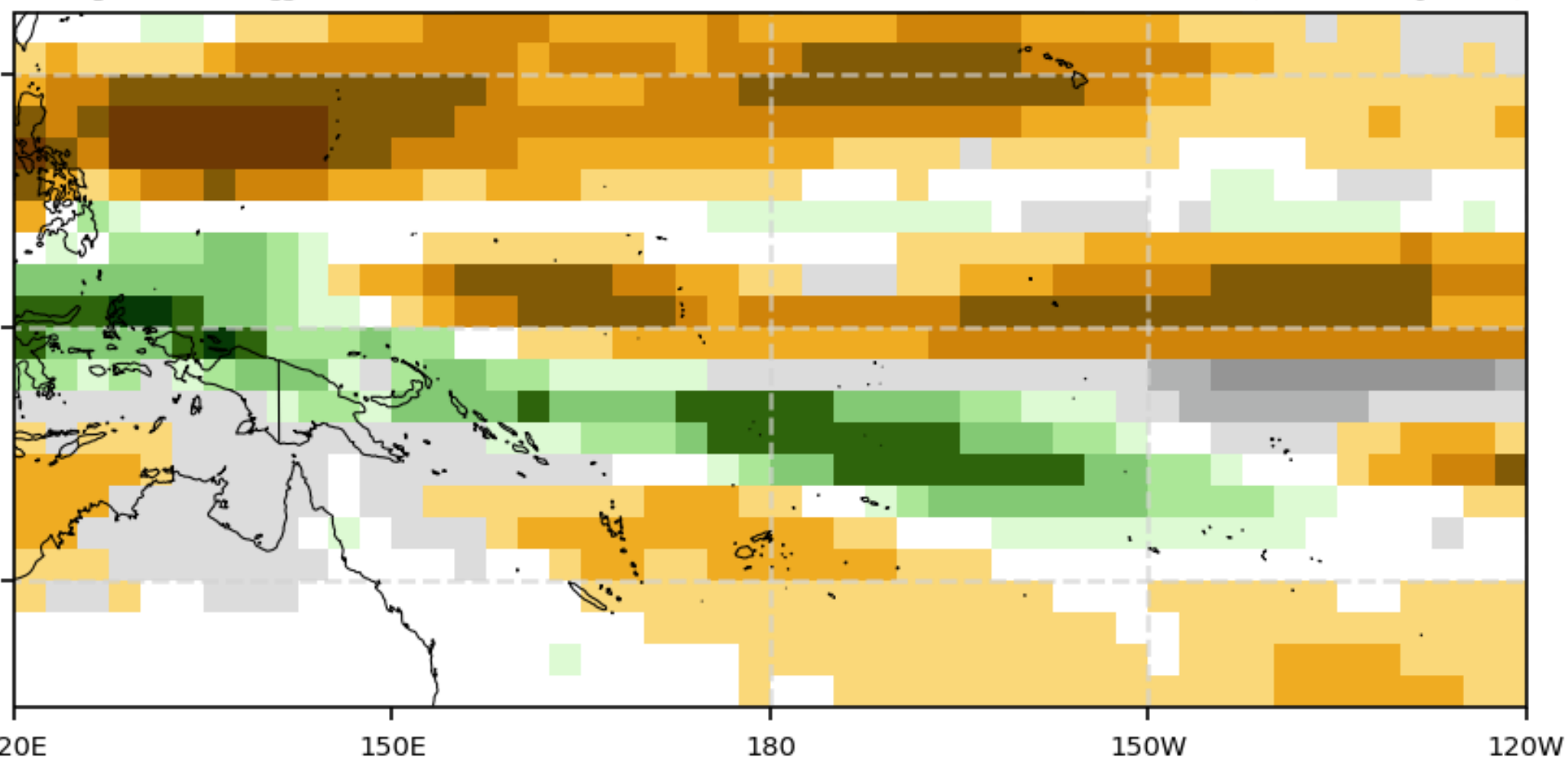
# May-Jul rainfall: WMO LRF-MME

## Probabilistic Multi-Model Ensemble Forecast

Beijing, CMCC, CPTEC, ECMWF, Exeter, Melbourne, Montreal, Moscow, Offenbach, Seoul, Tokyo, Toulouse, Washington

### Precipitation : MJJ2024

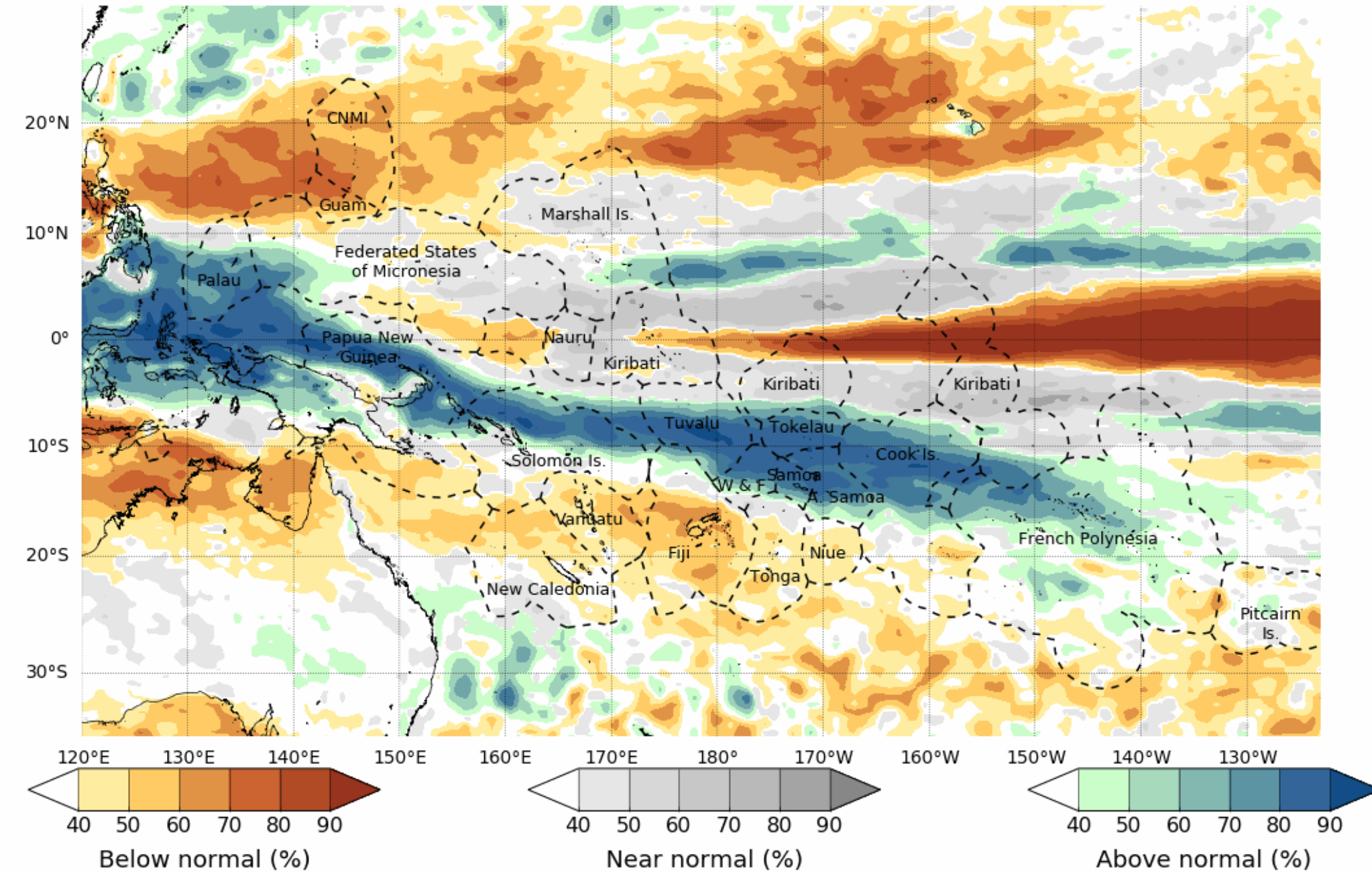
(issued on Apr2024)





# May-Jul rainfall: ACCESS-S

Tercile rainfall probabilities for May to July 2024

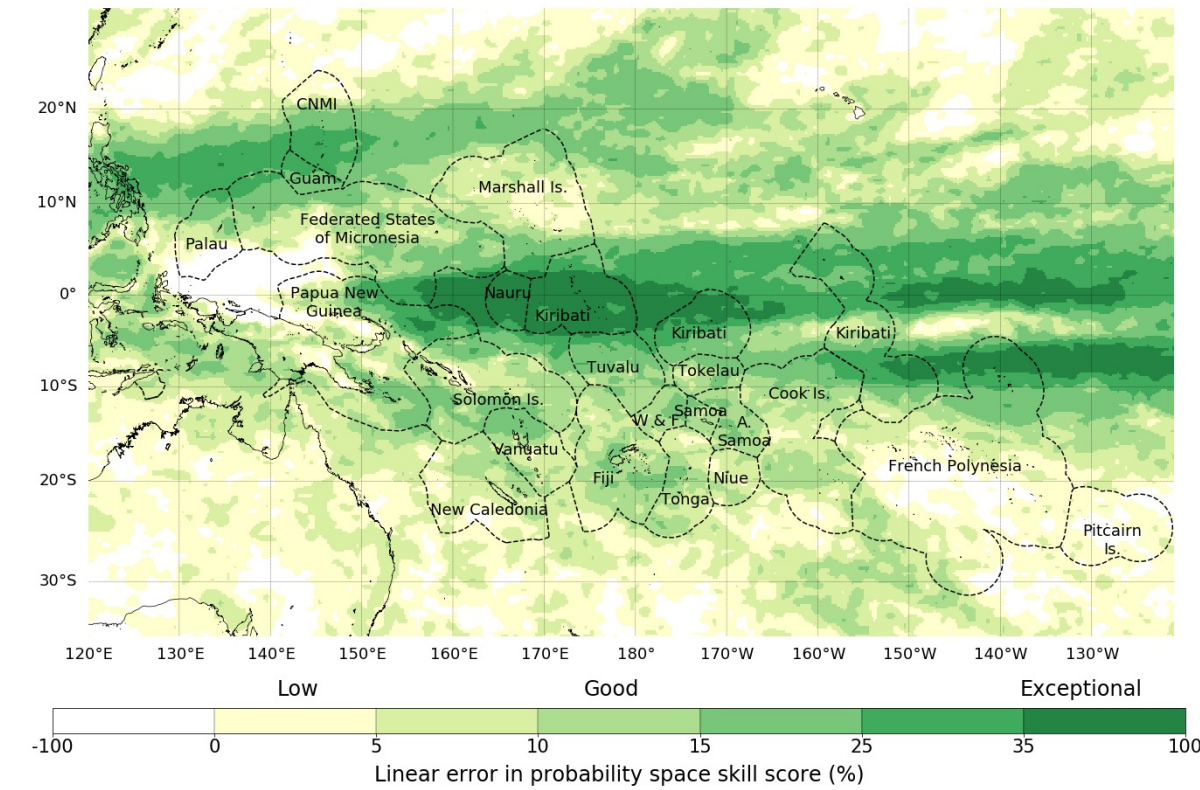


Base period: 1981-2018  
 Model: ACCESS-S2  
 © Commonwealth of Australia 2024, Australian Bureau of Meteorology  
 Model run: 08/04/2024  
 Issued: 10/04/2024

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/>.



Tercile seasonal rainfall past accuracy for June - August. Lead time: 2 months



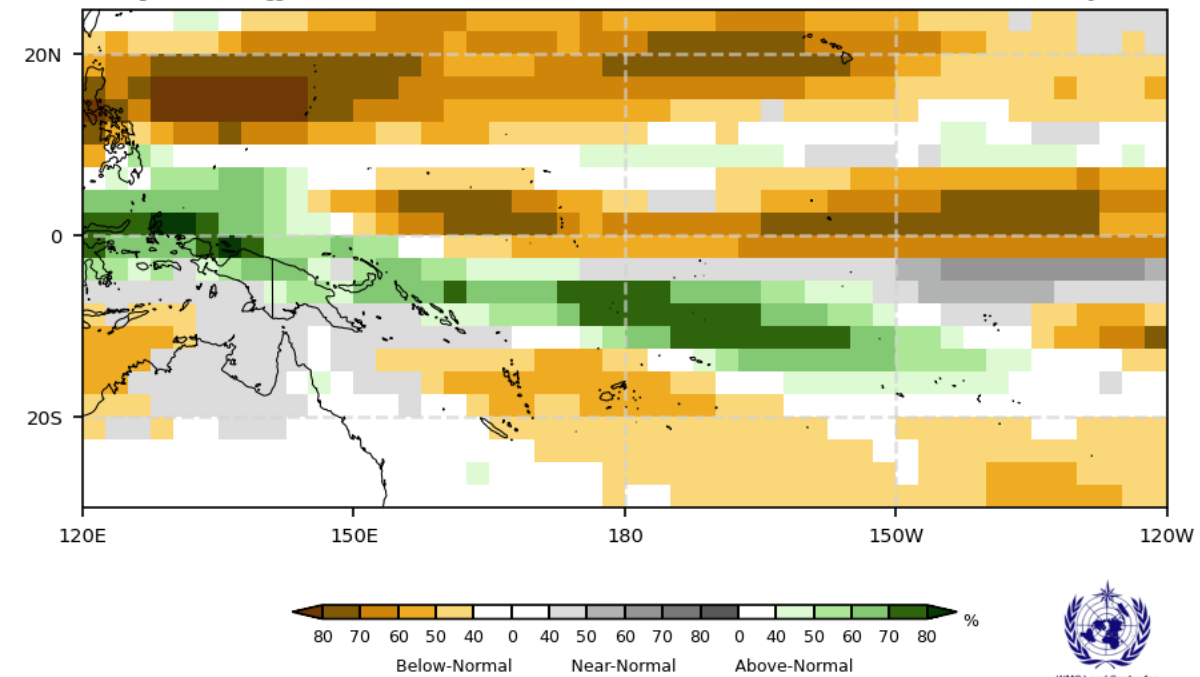
Run date: 1st April  
 Base period: 1981-2018  
 Issued: 22/12/2021  
 Data source: ACCESS-S2 and ERA5 Climate Reanalysis  
 © Commonwealth of Australia 2021, Australian Bureau of Meteorology, Supported by COSPPac  
 Shapefile data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at <http://www.marinerregions.org/>.

## Probabilistic Multi-Model Ensemble Forecast

Beijing, CMCC, CPTEC, ECMWF, Exeter, Melbourne, Montreal, Moscow, Offenbach, Seoul, Tokyo, Toulouse, Washington

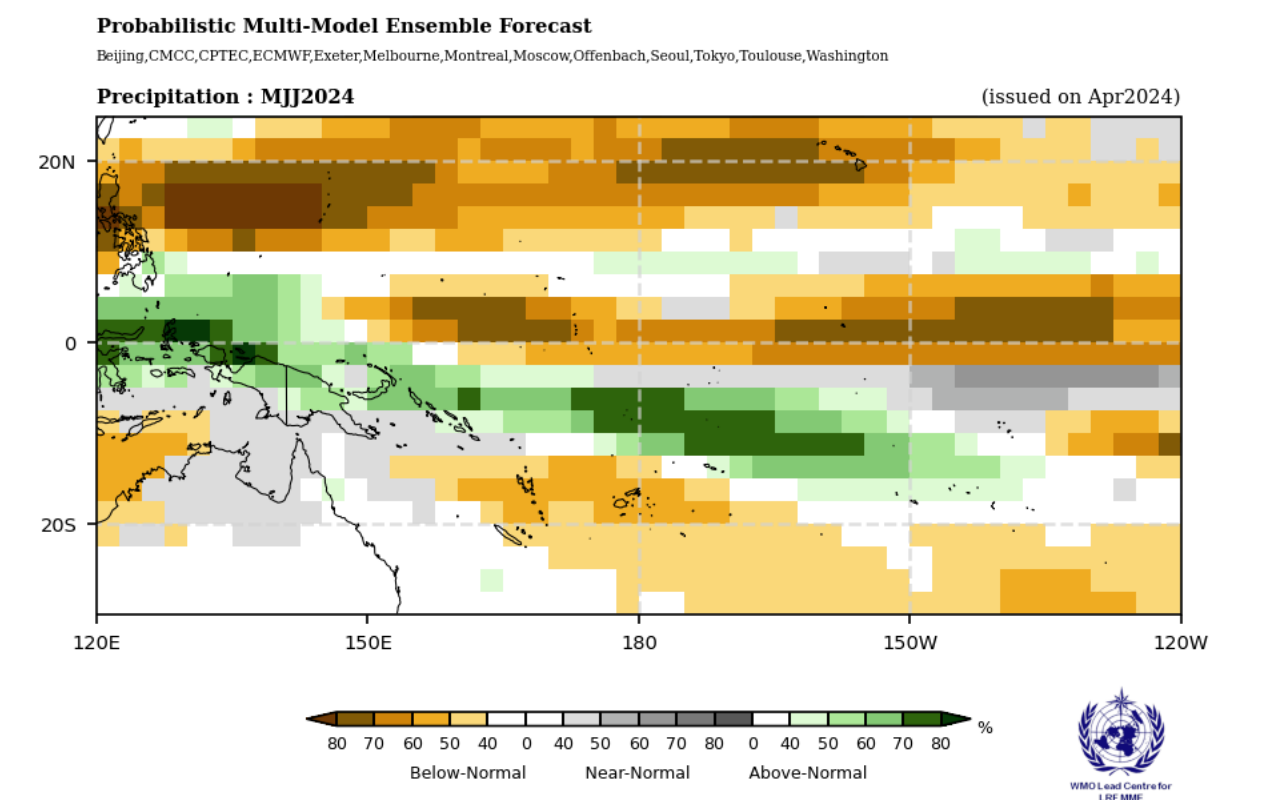
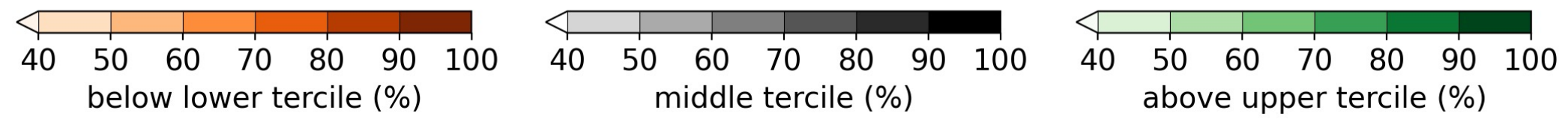
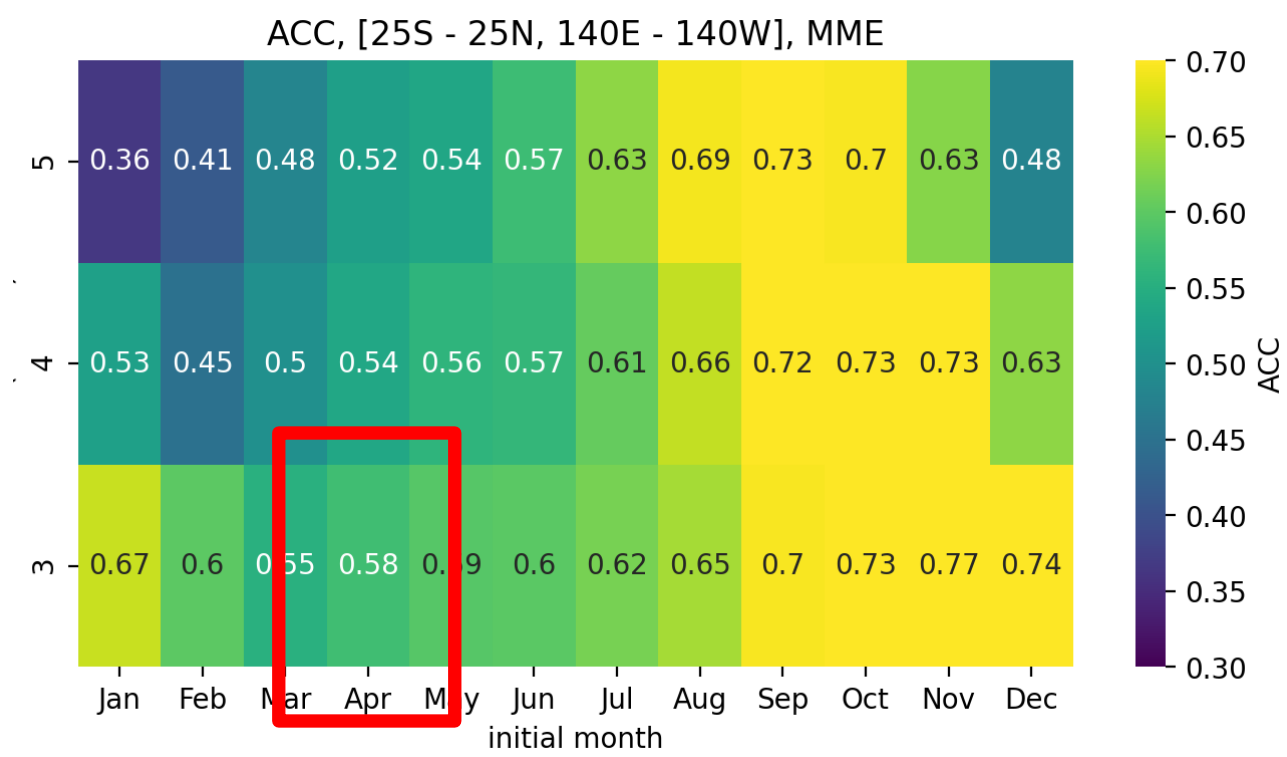
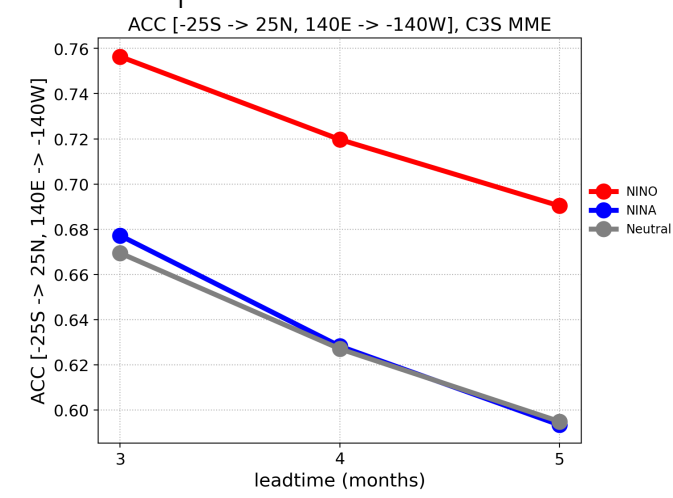
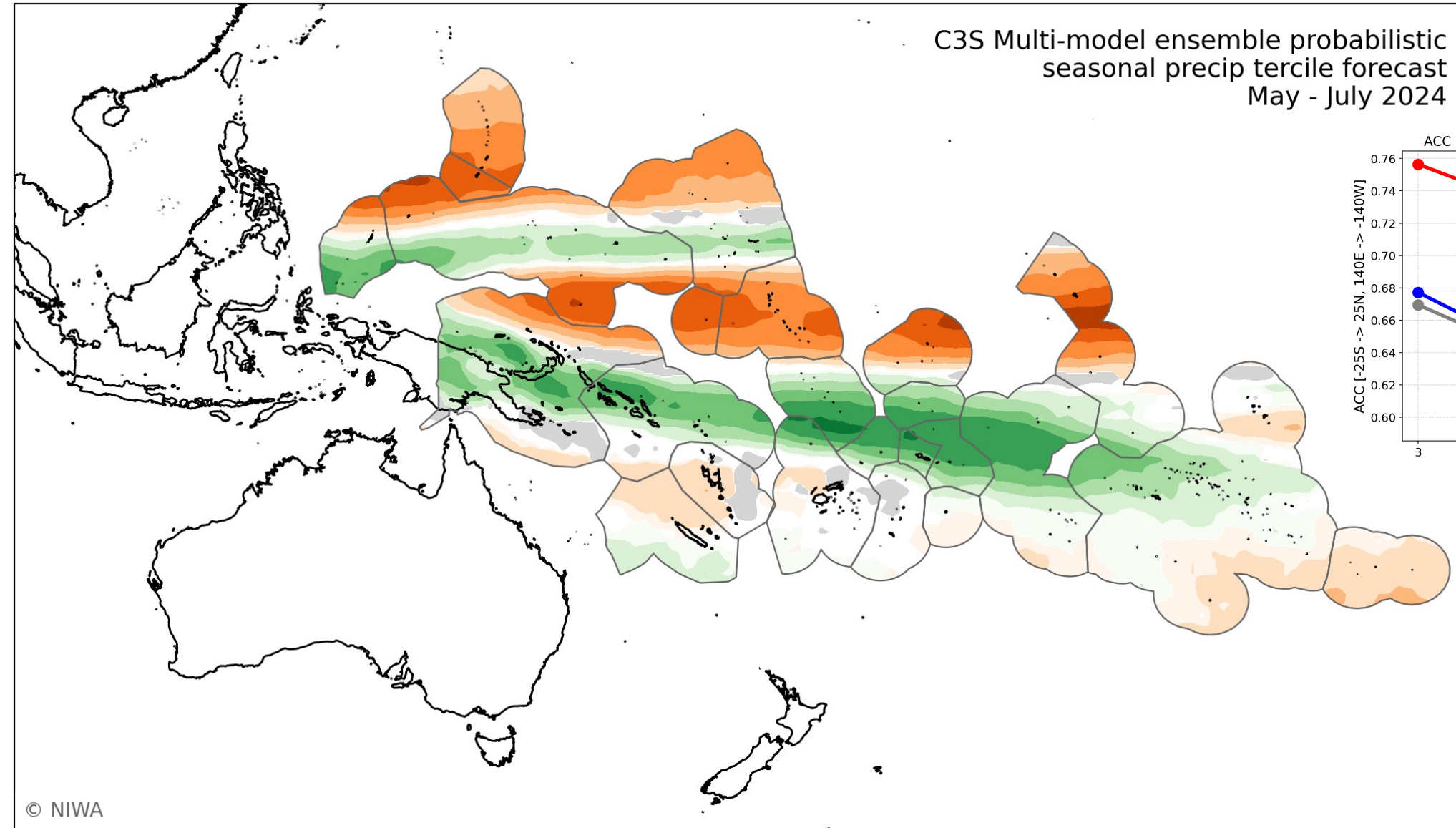
## Precipitation : MJJ2024

(issued on Apr2024)





# May-Jul rainfall: NIWA Island Climate Update





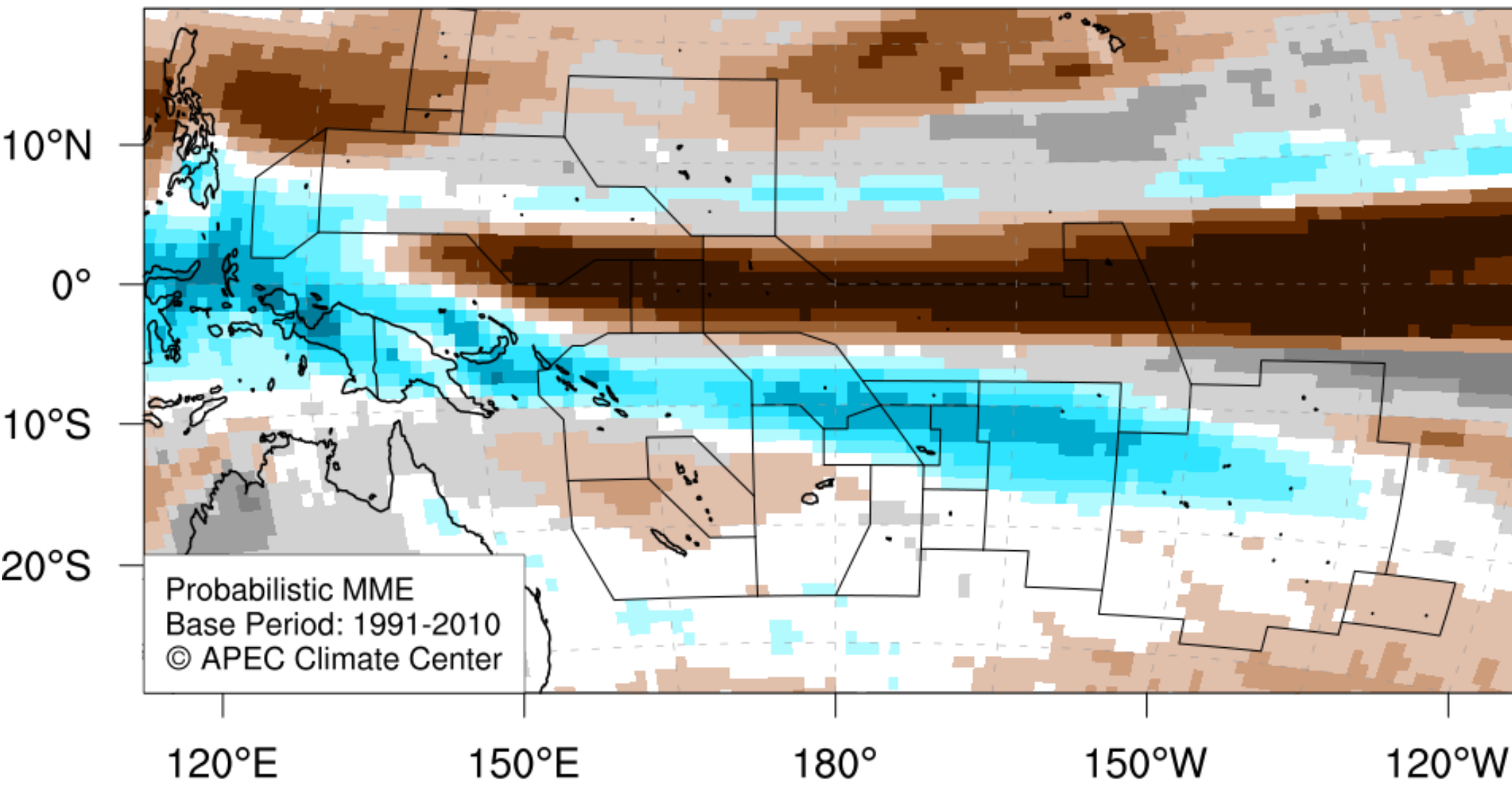
# May-Jul rainfall: APCC

Heidke Skill Score :PREC, MJJ (1991-2010)

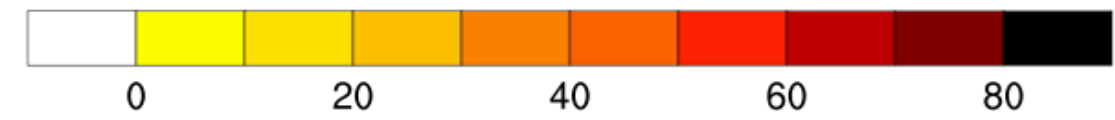
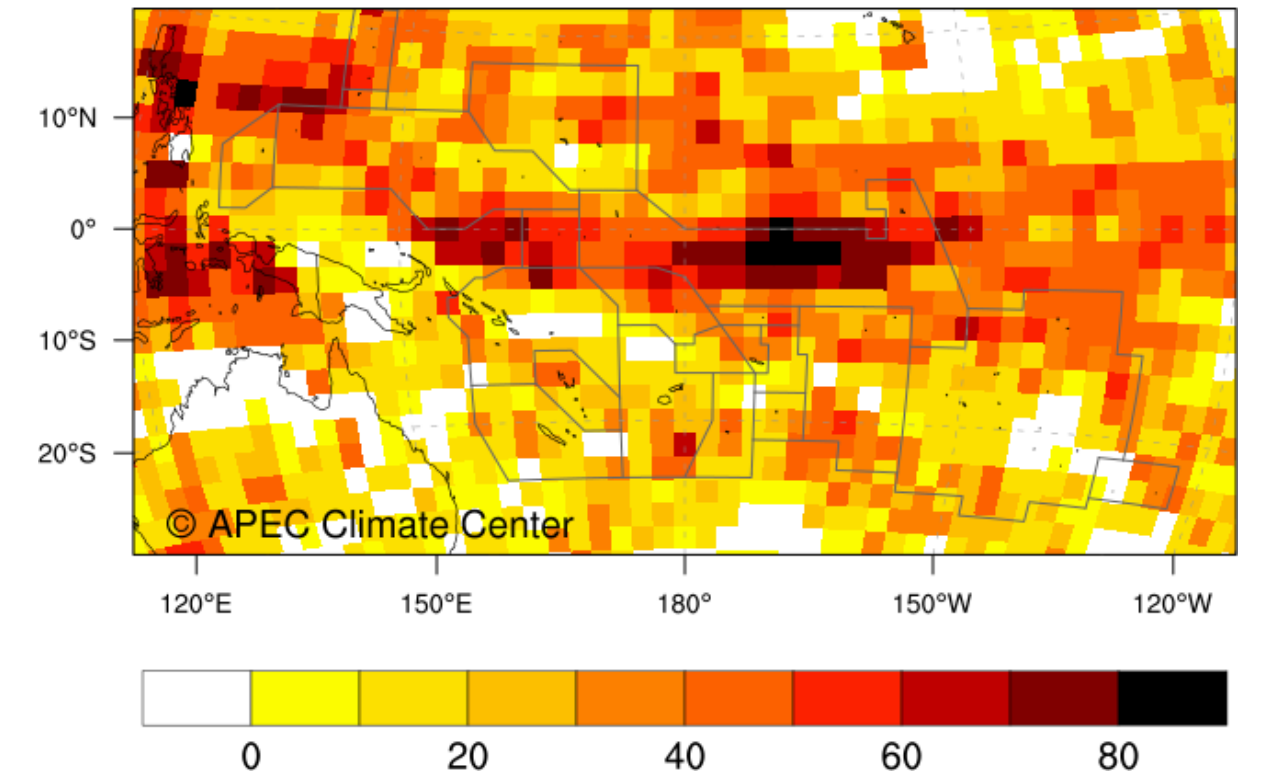
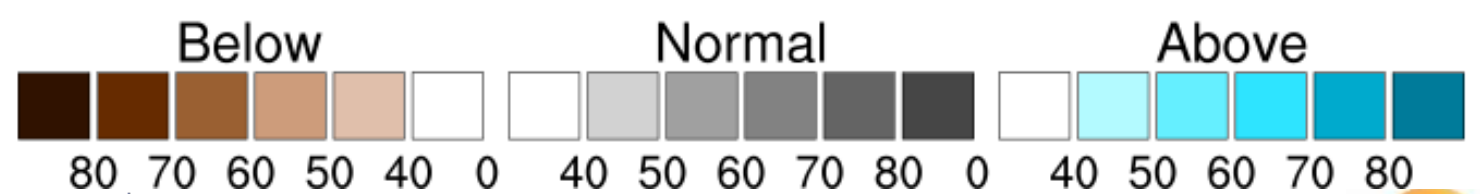
## Precipitation for May-July 2024

Issued: 15 Apr 2024

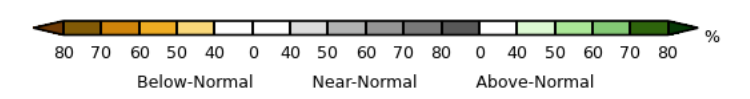
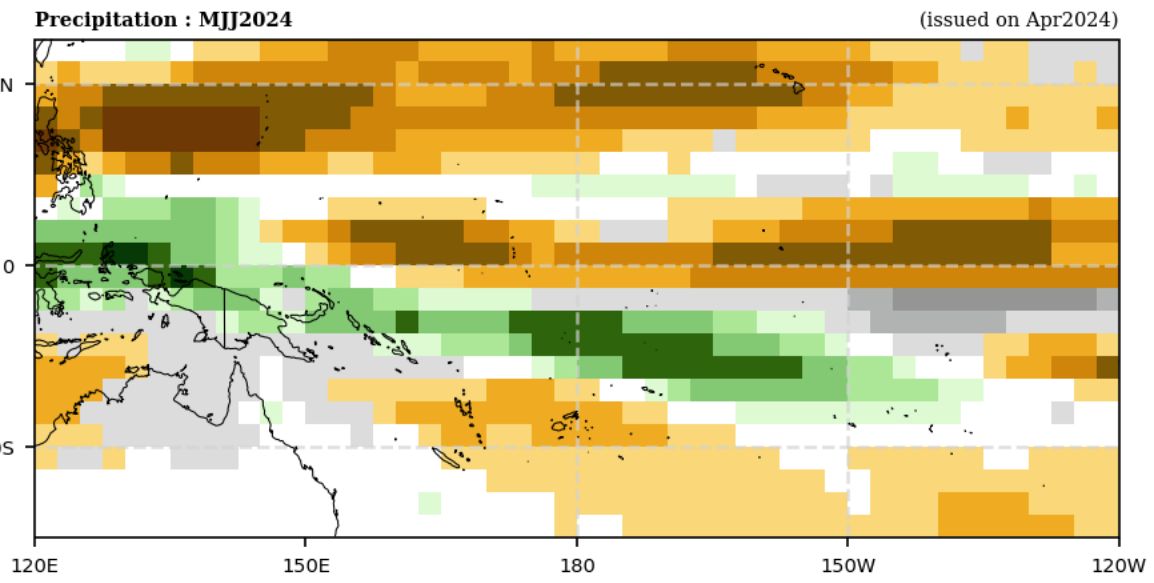
Unit: % (Probability)



Probabilistic MME  
Base Period: 1991-2010  
© APEC Climate Center



Probabilistic Multi-Model Ensemble Forecast  
Beijing, CMCC, CPTCC, ECMWF, Exeter, Melbourne, Montreal, Moscow, Offenbach, Seoul, Tokyo, Toulouse, Washington

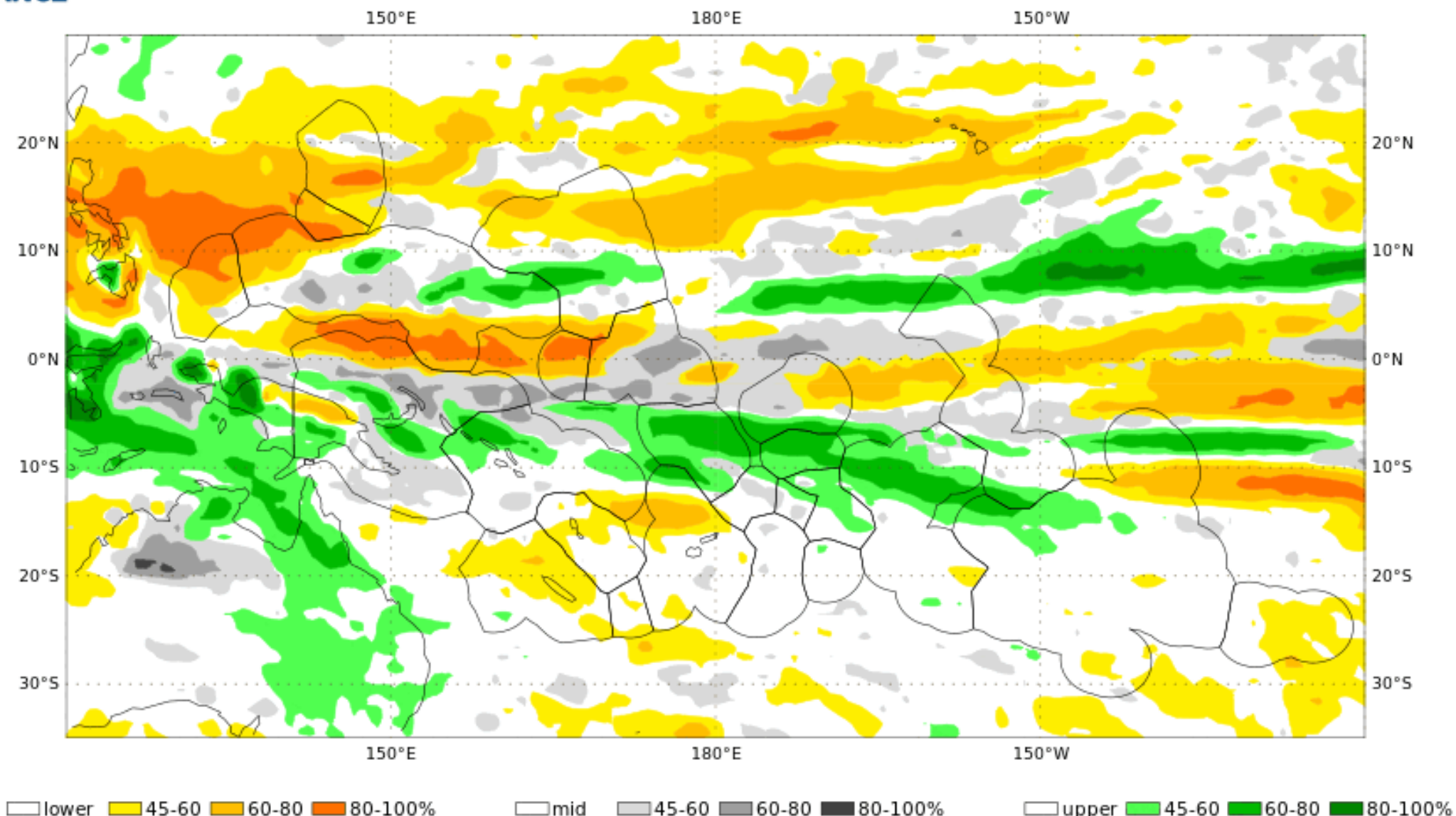




# May-Jul rainfall: Météo-France



Meteo-France system 8 - Forecast  
For MJJ 2024 (issued April 2024)



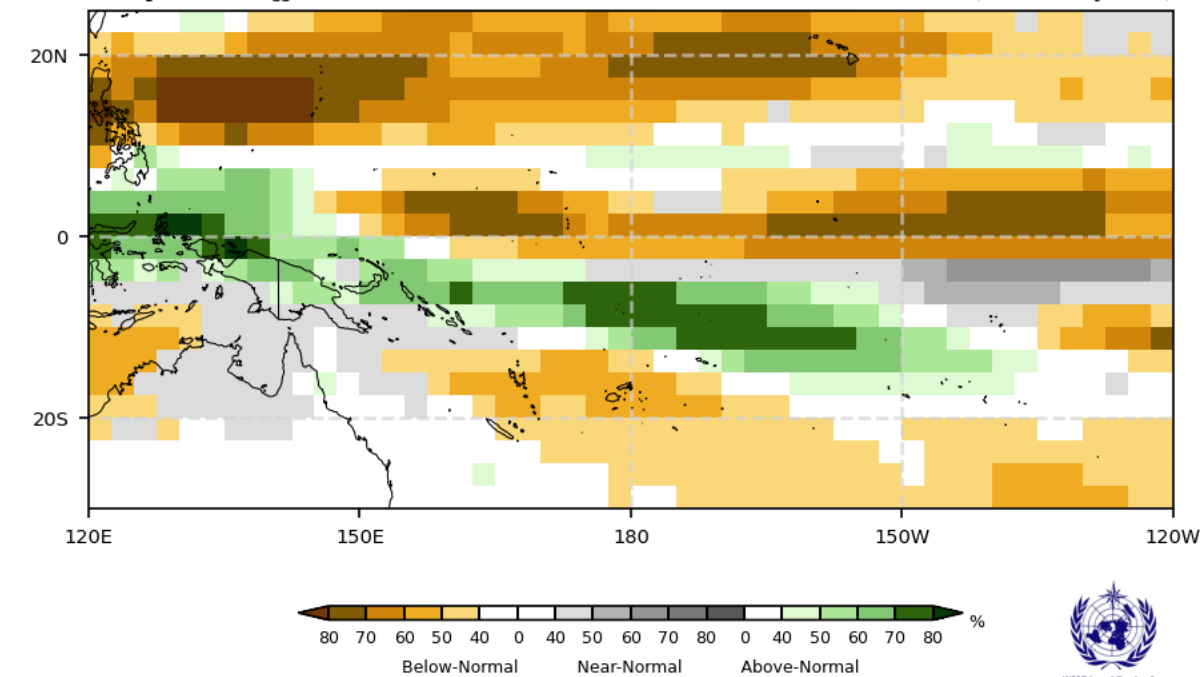
precipitations  
Tercile summary

Probabilistic Multi-Model Ensemble Forecast

Beijing, CMCC, CPTec, ECMWF, Exeter, Melbourne, Montreal, Moscow, Offenbach, Seoul, Tokyo, Toulouse, Washington

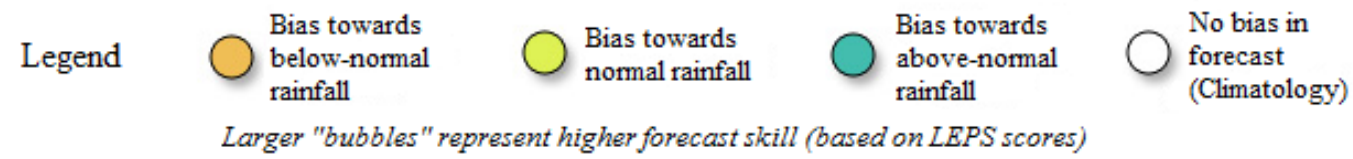
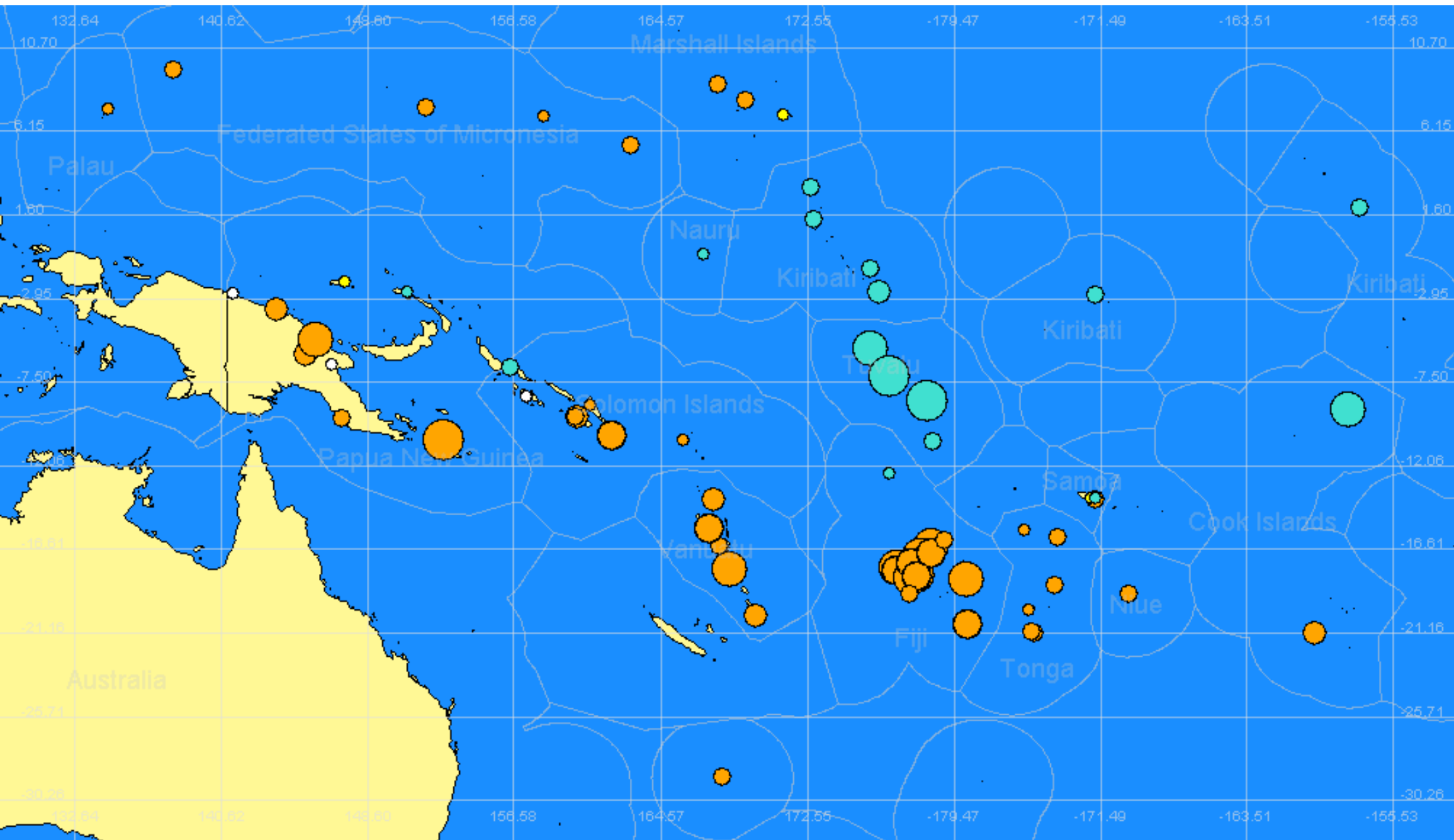
Precipitation : MJJ2024

(issued on Apr2024)

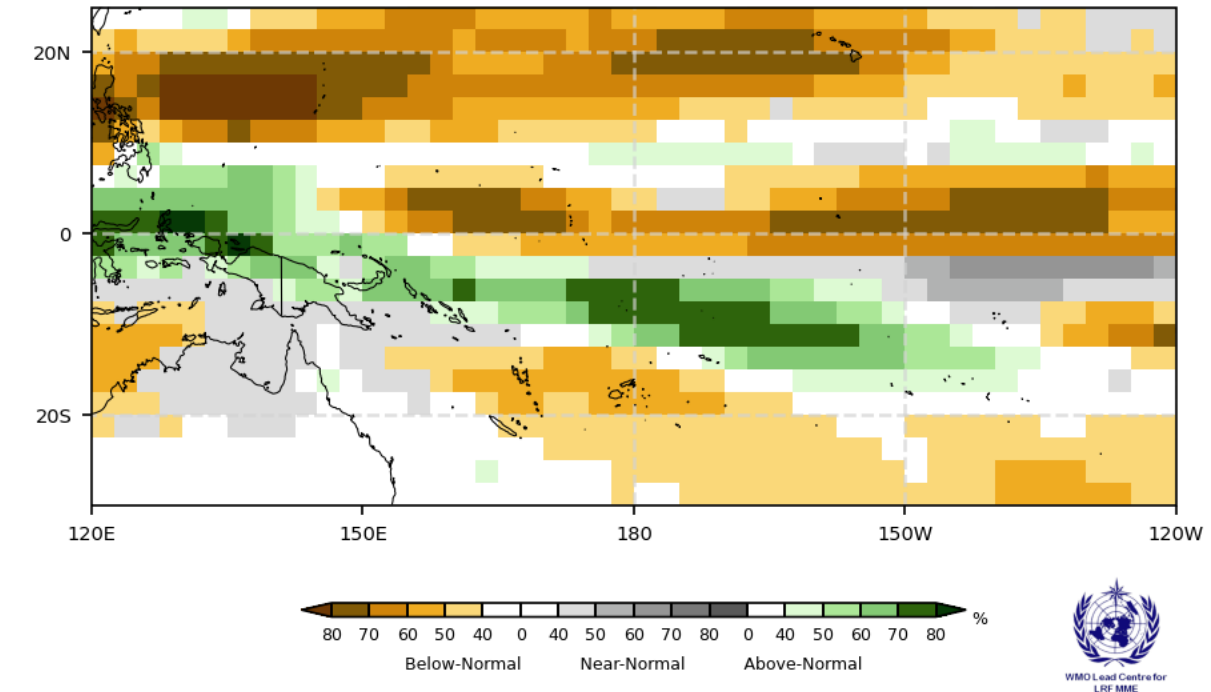




# May-Jul rainfall: SPREP/SCOPIC



**Probabilistic Multi-Model Ensemble Forecast**  
 Beijing, CMCC, CPTec, ECMWF, Exeter, Melbourne, Montreal, Moscow, Offenbach, Seoul, Tokyo, Toulouse, Washington  
**Precipitation : MJJ2024** (issued on Apr2024)





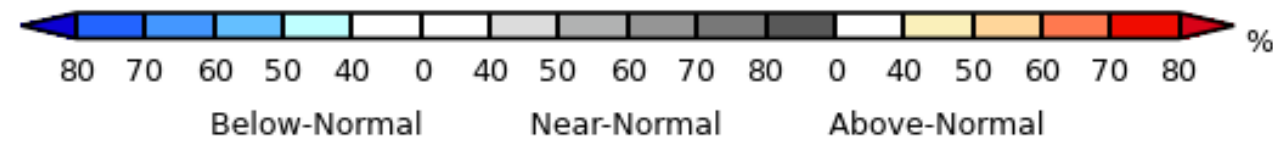
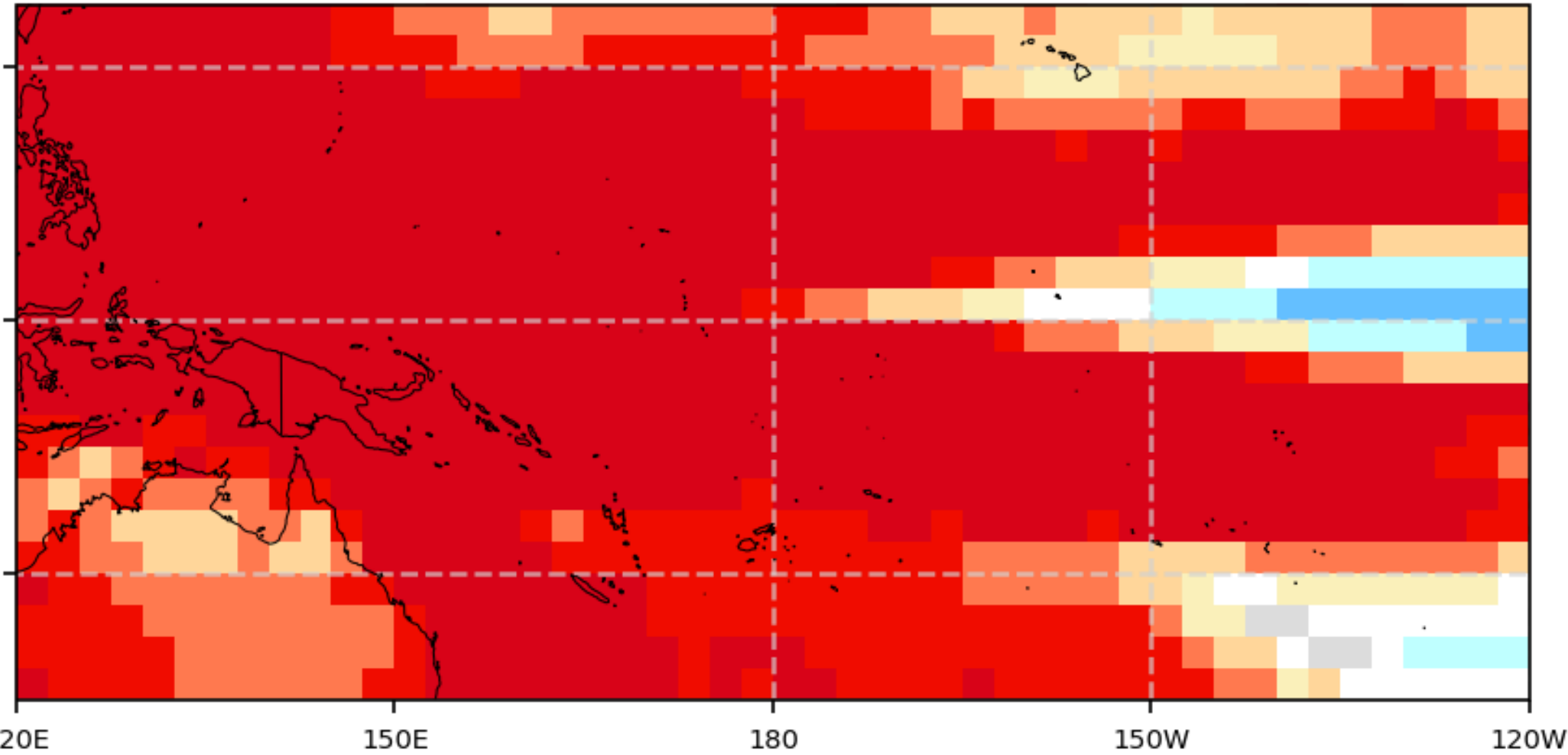
# May-Jul temperature: WMO LRF-MME & other models

## Probabilistic Multi-Model Ensemble Forecast

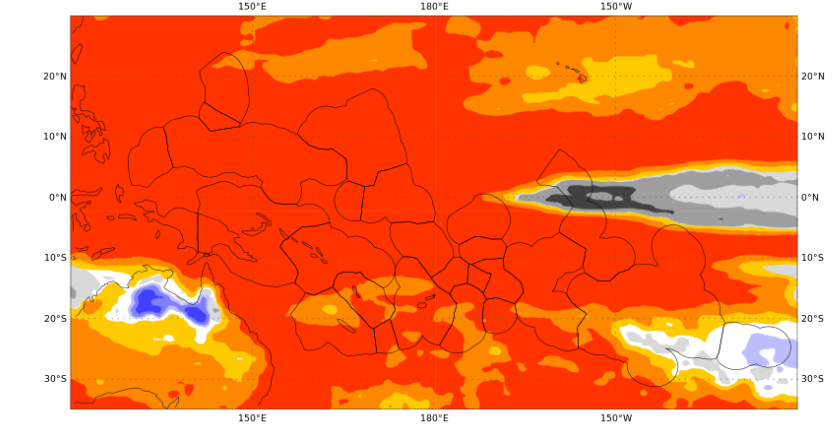
Beijing, CMCC, CPTEC, ECMWF, Exeter, Melbourne, Montreal, Moscow, Offenbach, Seoul, Tokyo, Toulouse, Washington

### 2m Temperature : MJJ2024

(issued on Apr2024)

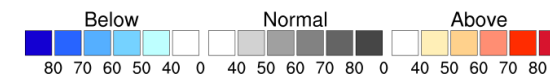
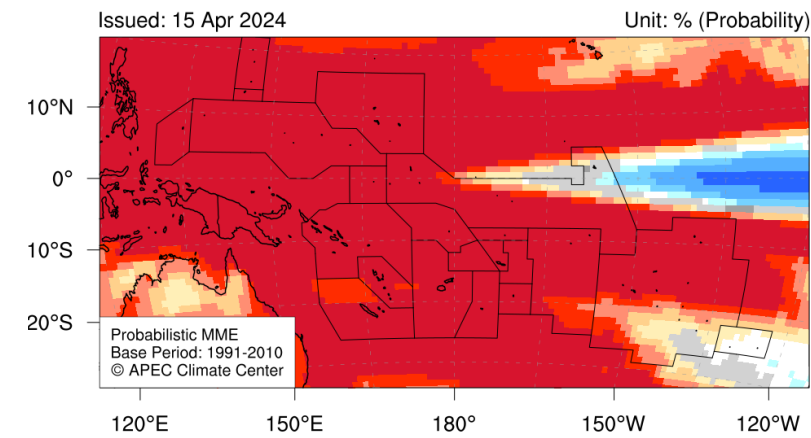


### Meteo-France system 8 - Forecast For MJJ 2024 (issued April 2024)

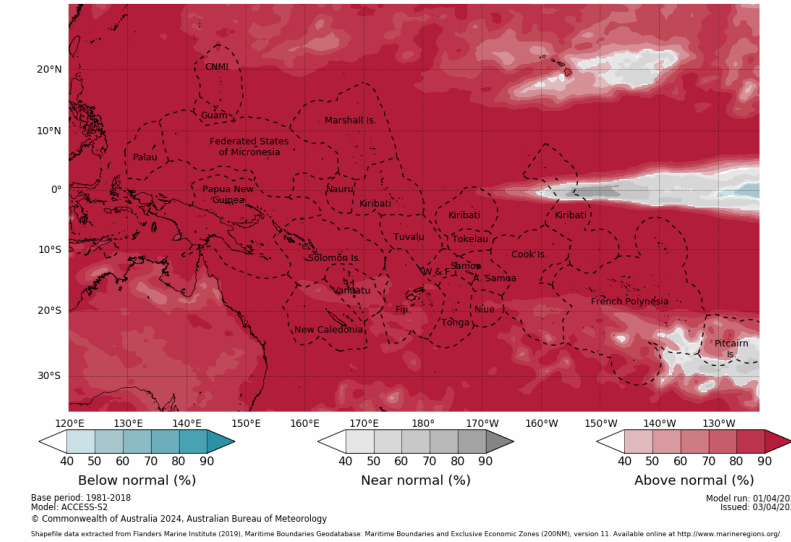


2m temperature  
Tercile summary  
unit : %

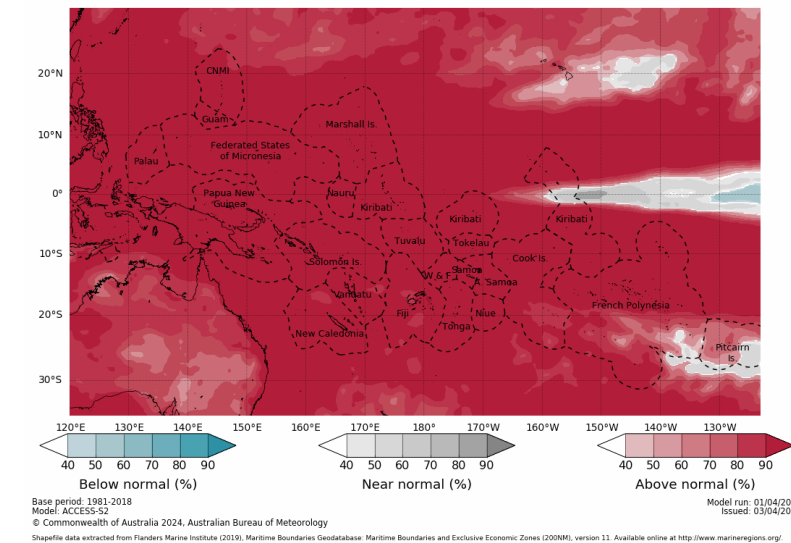
### Temperature at 2m for May-July 2024



### Tercile maximum temperature probabilities for May to July 2024



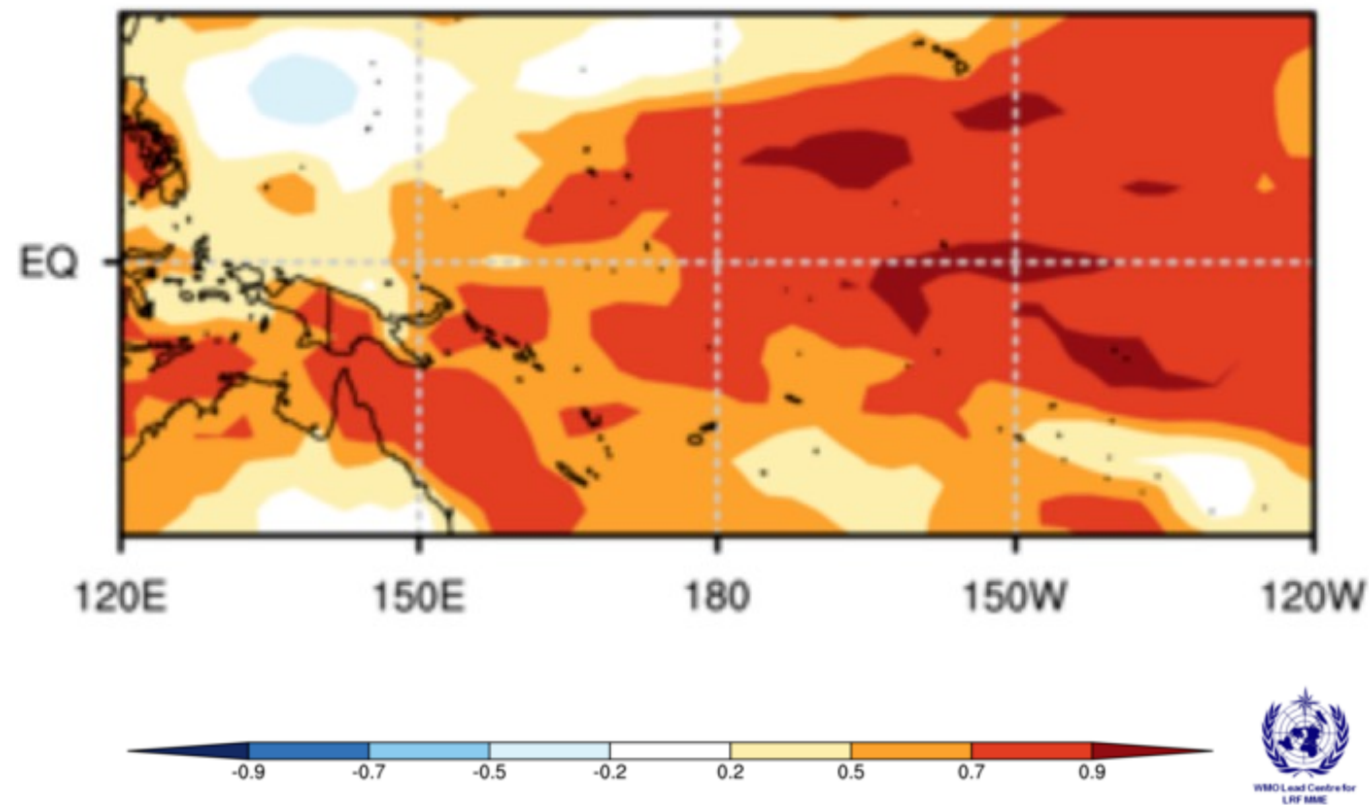
### Tercile minimum temperature probabilities for May to July 2024



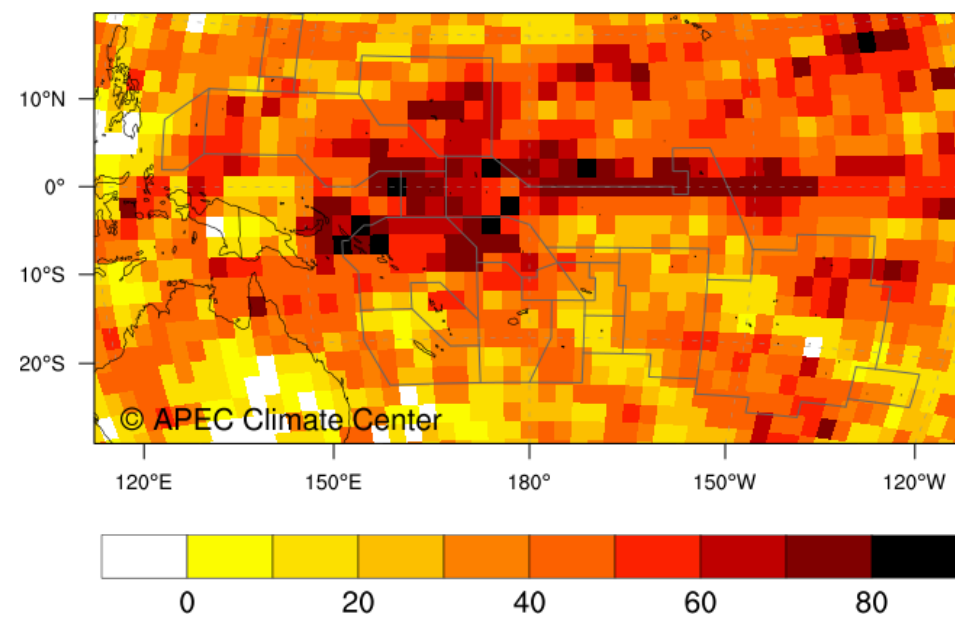


# May-Jul temperature: WMO LRF-MME & other models - skill

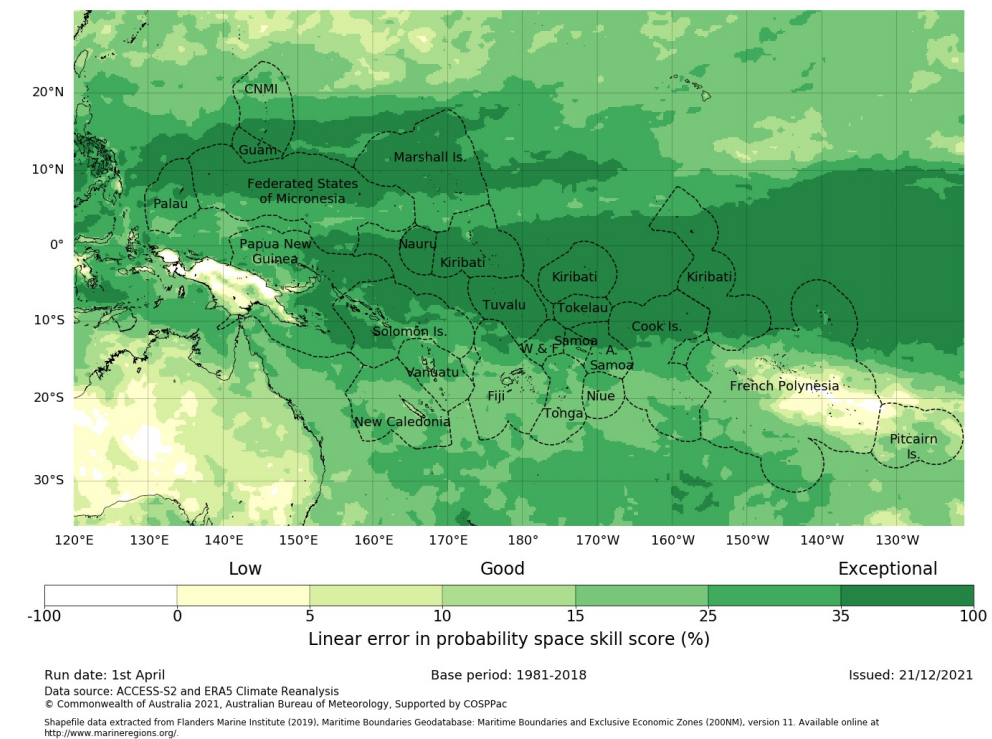
MJJ 0.612



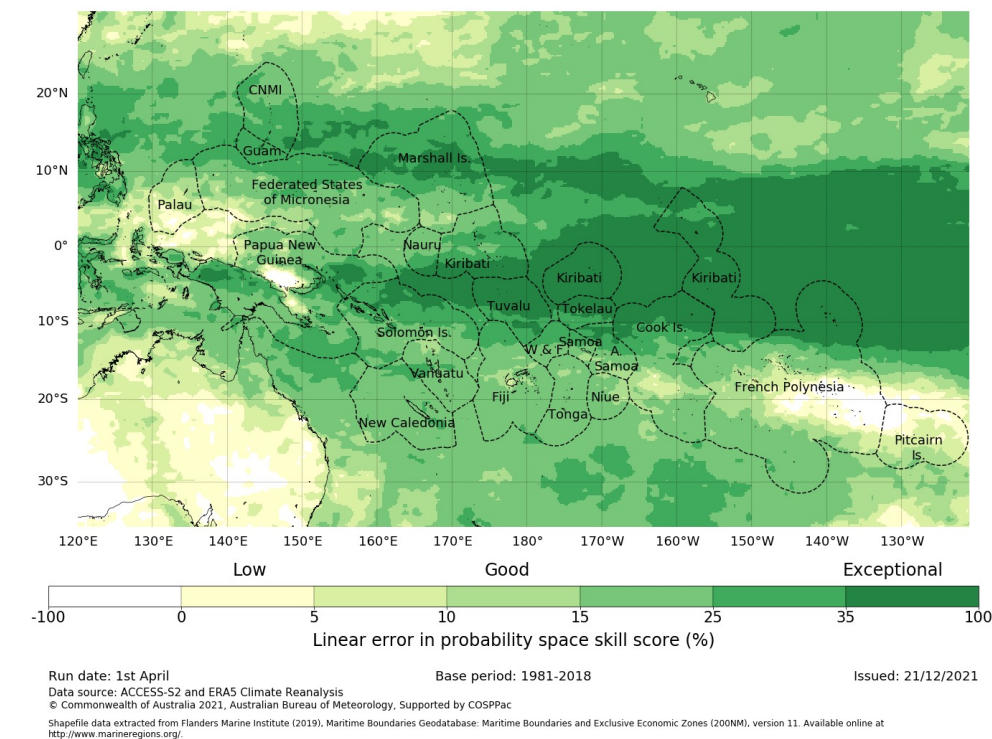
Heidke Skill Score : T2M, MJJ (1991-2010)



Tercile seasonal maximum temperature past accuracy for June - August. Lead time: 2 months



Tercile seasonal minimum temperature past accuracy for June - August. Lead time: 2 months





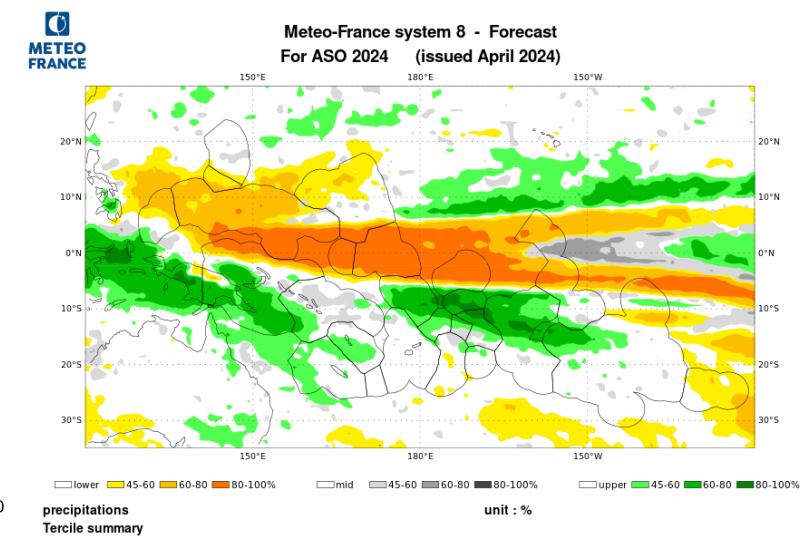
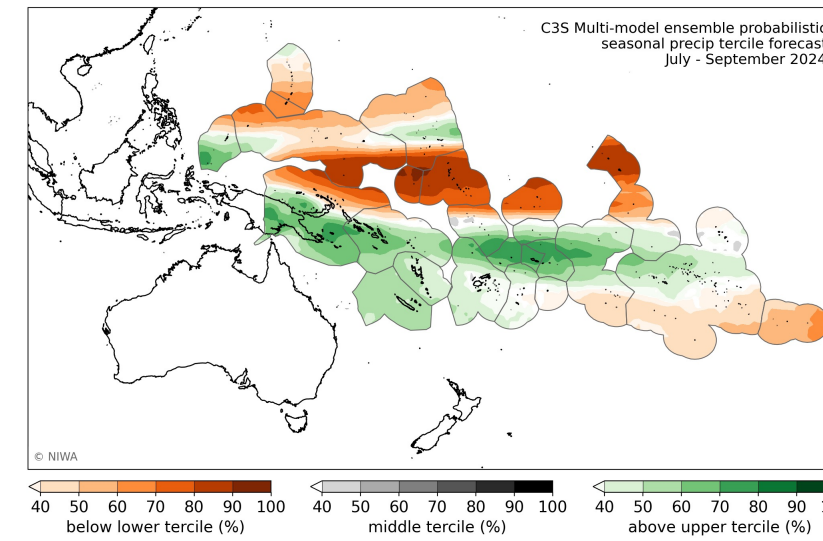
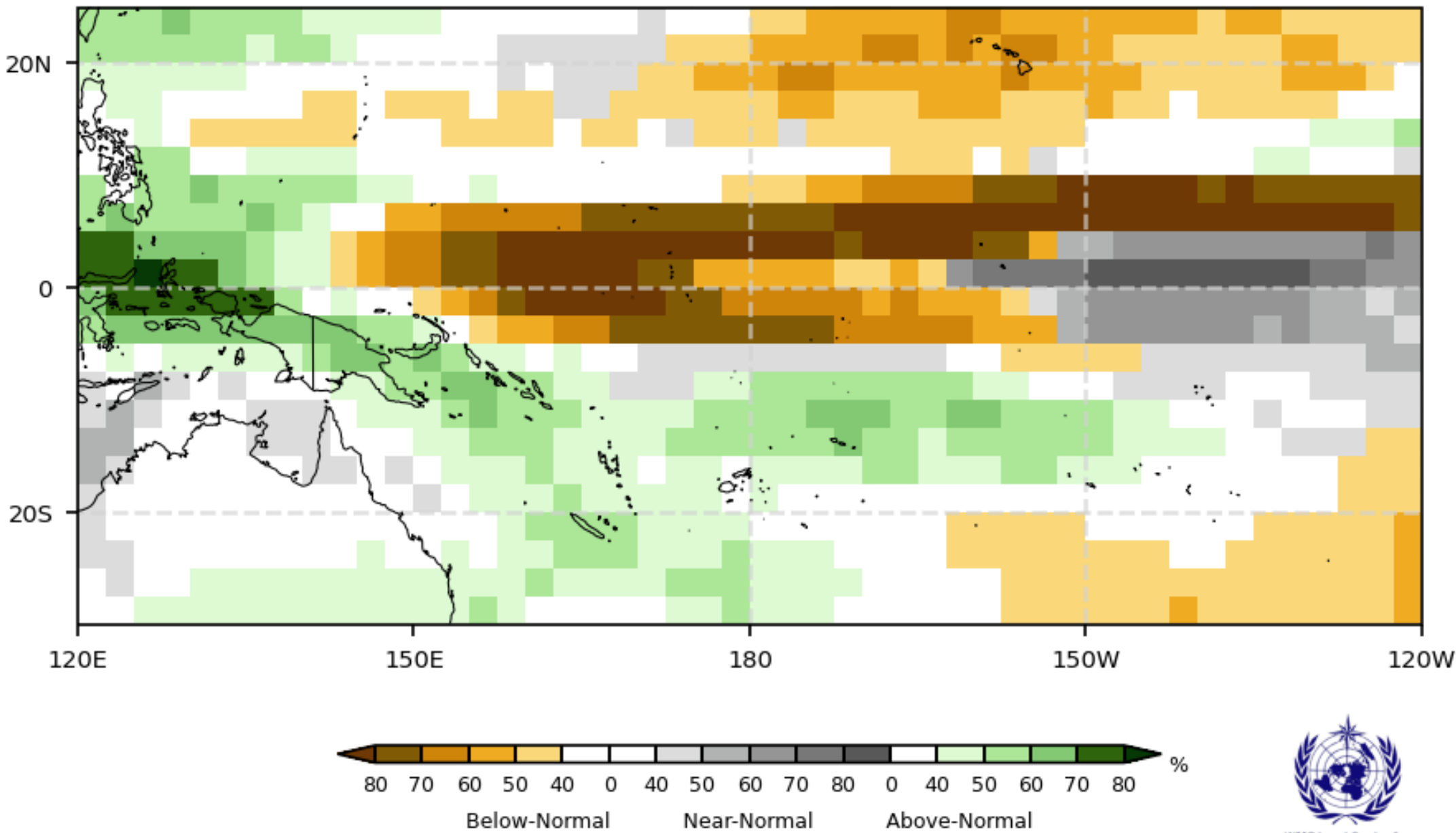
# Aug-Oct rainfall: WMO LRF-MME & other models

## Probabilistic Multi-Model Ensemble Forecast

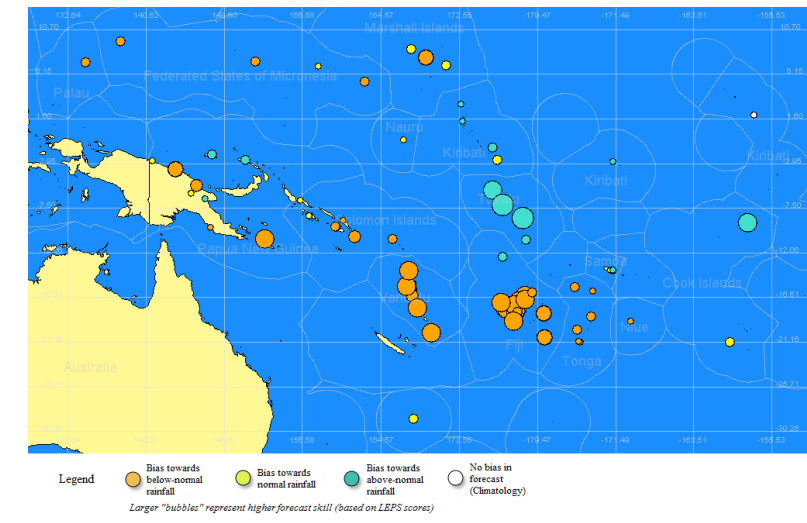
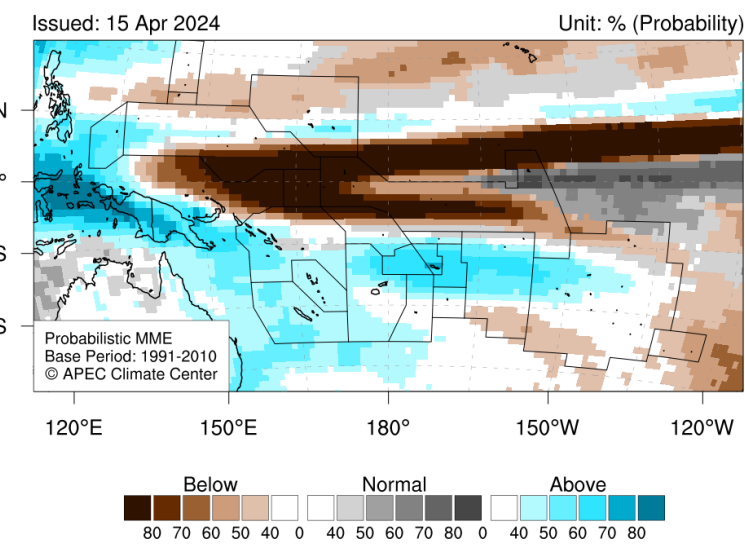
Beijing, Montreal, Seoul, Tokyo, Washington

### Precipitation : ASO2024

(issued on Apr2024)

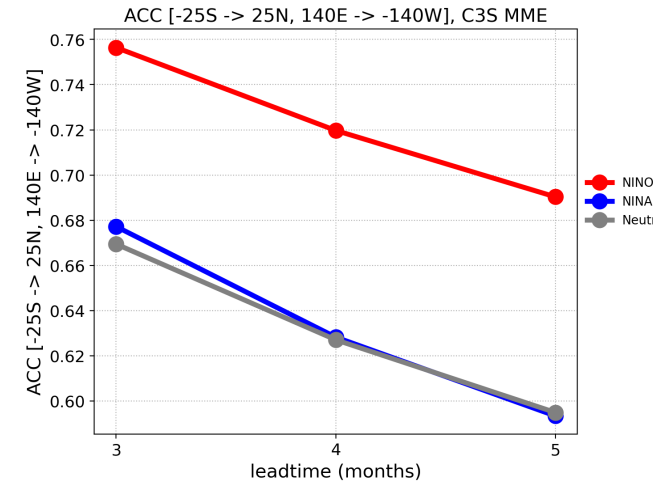


### Precipitation for August-October 2024

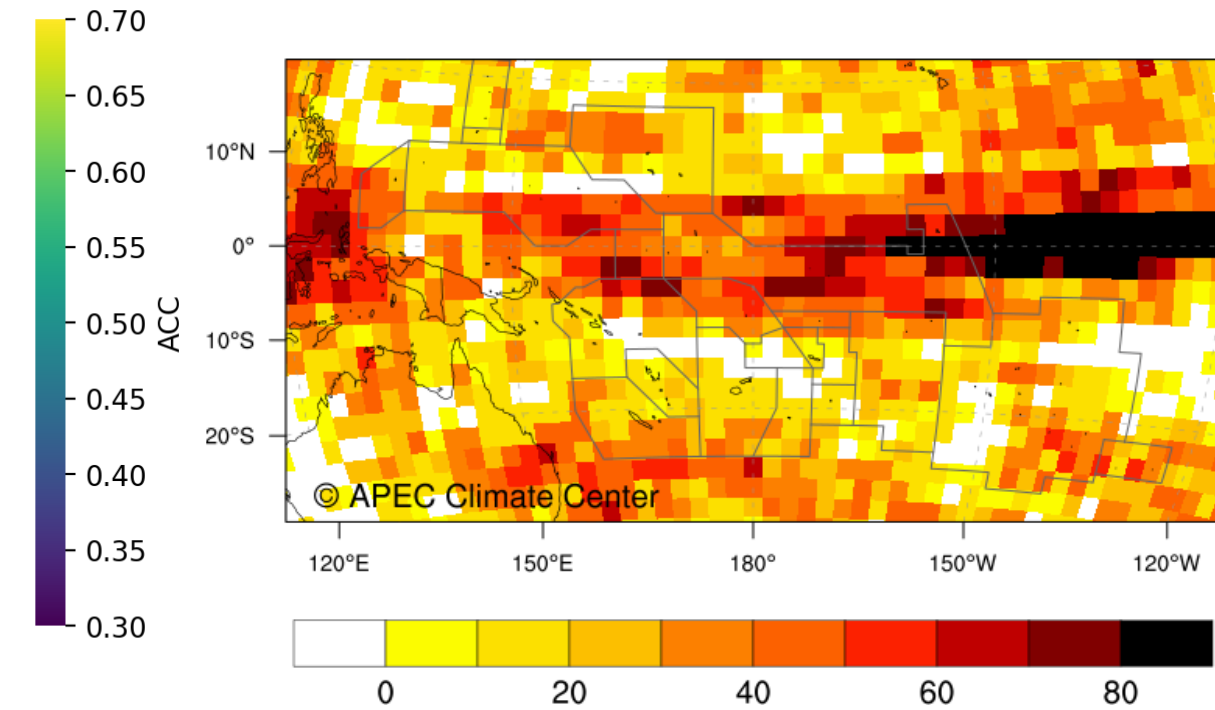
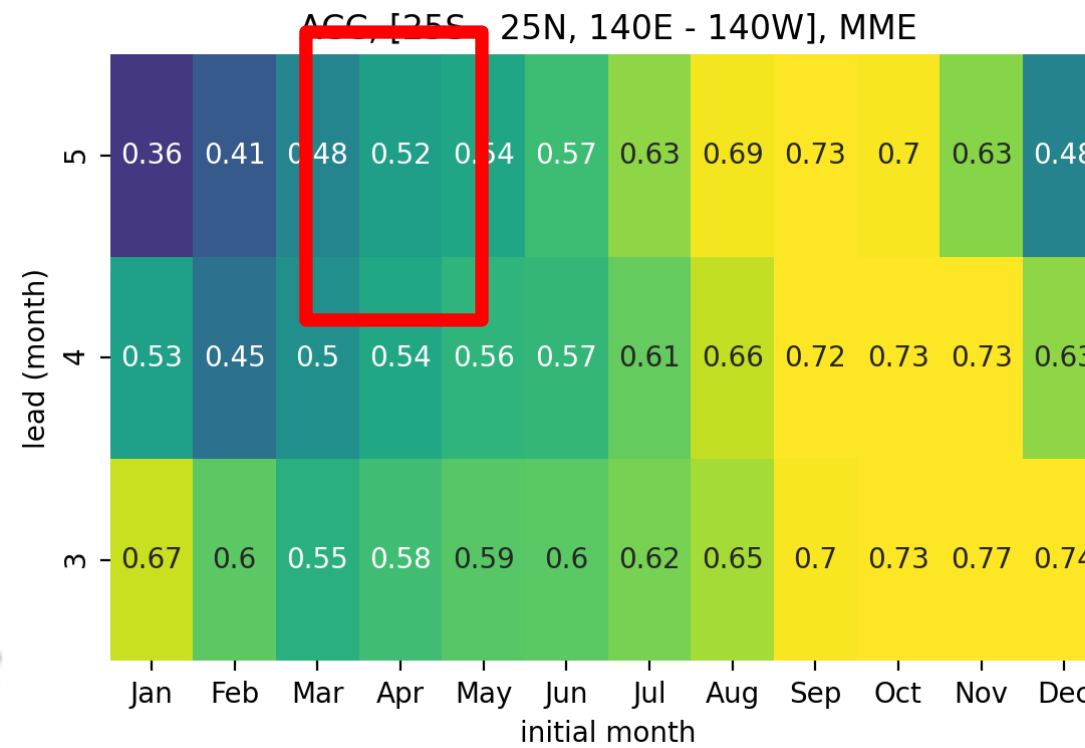
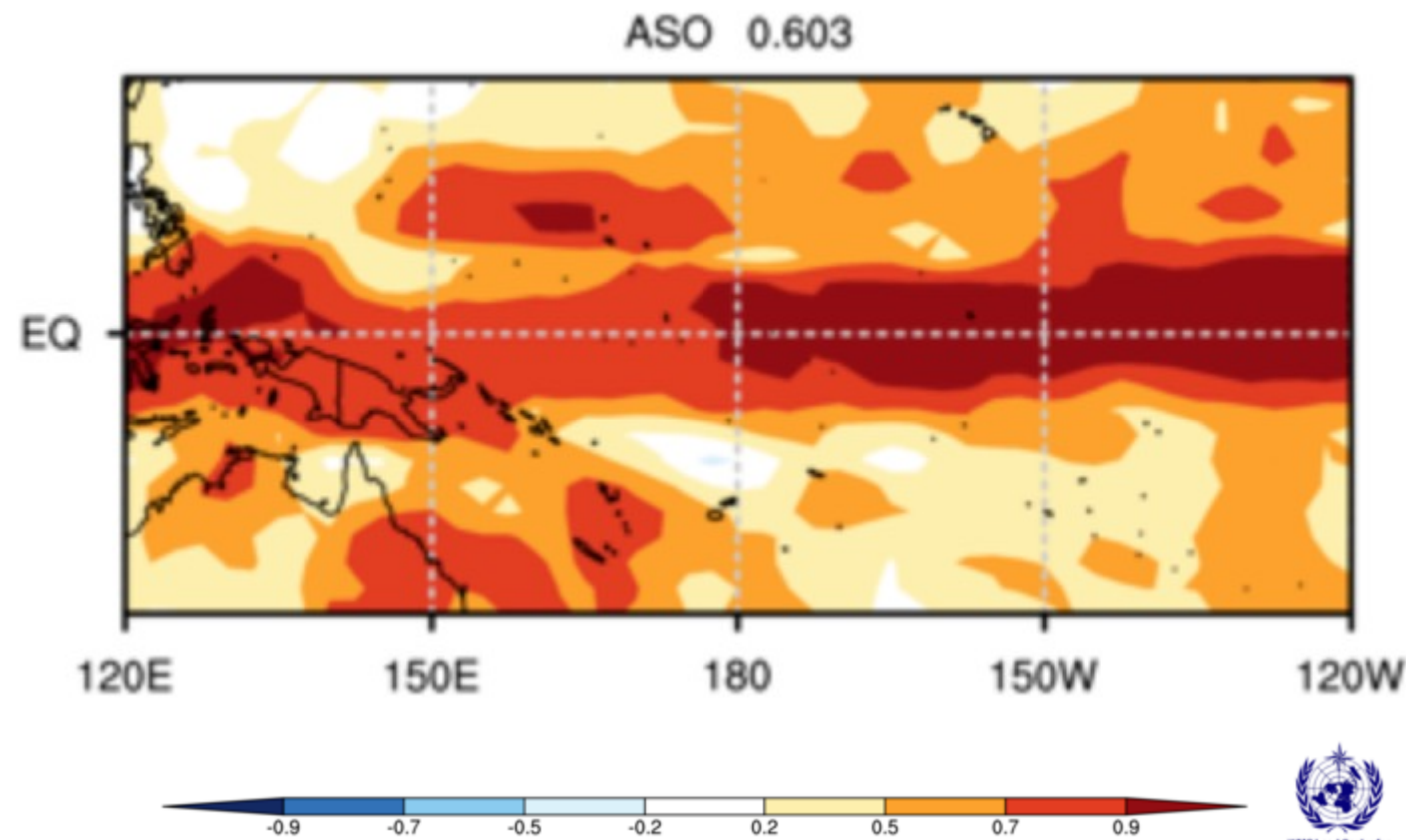




# Aug-Oct rainfall: WMO LRF-MME & other models - skill



Heidke Skill Score : PREC, ASO (1991-2010)





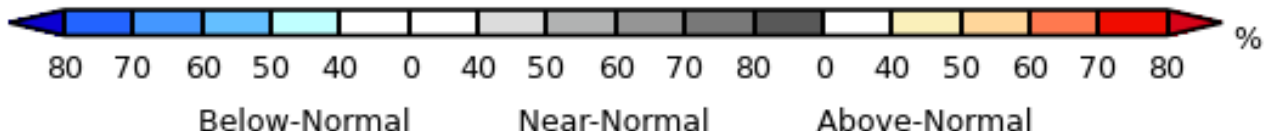
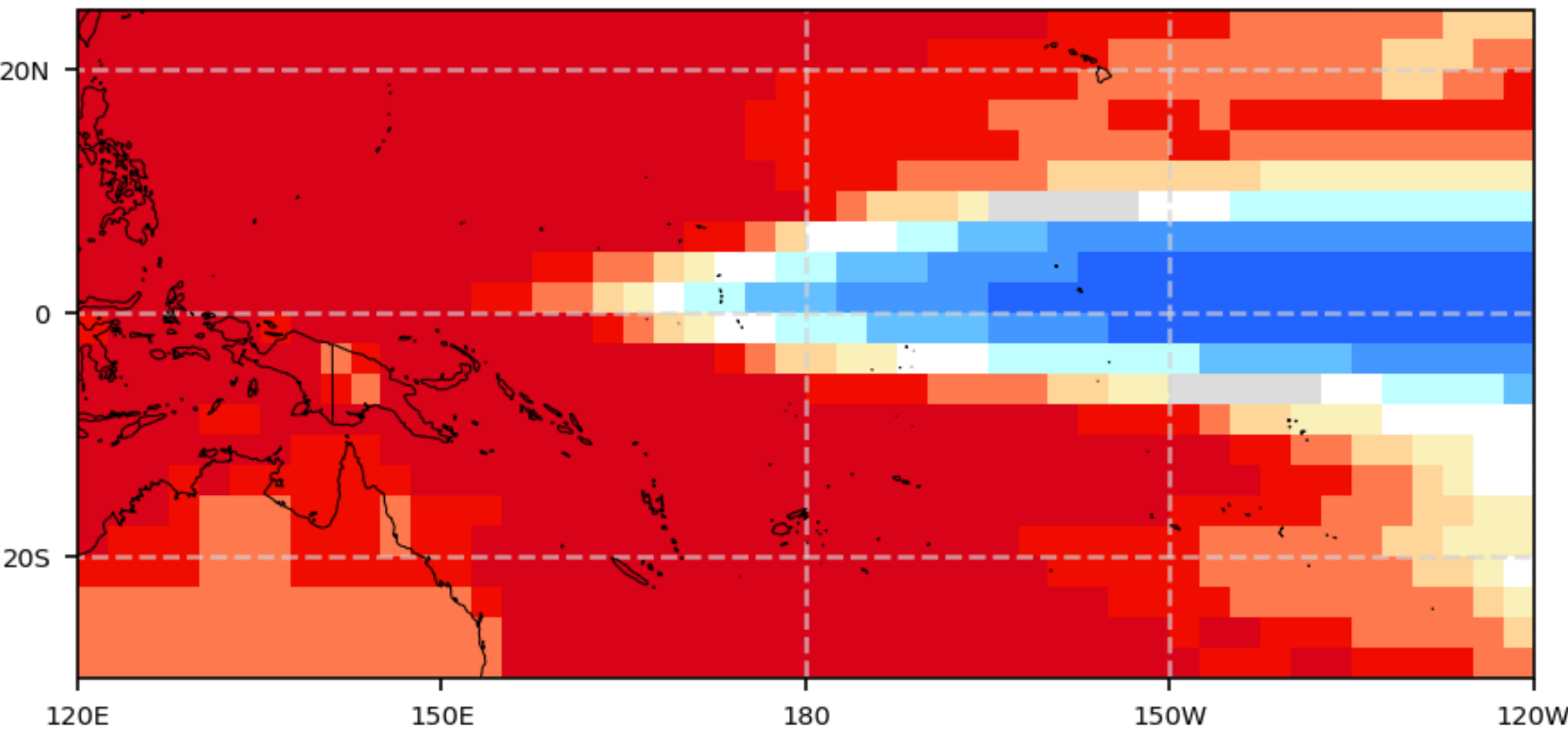
# Aug-Oct temperature: WMO LRF-MME & other models

## Probabilistic Multi-Model Ensemble Forecast

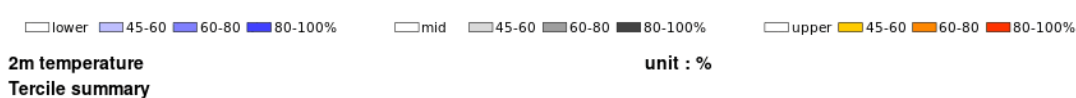
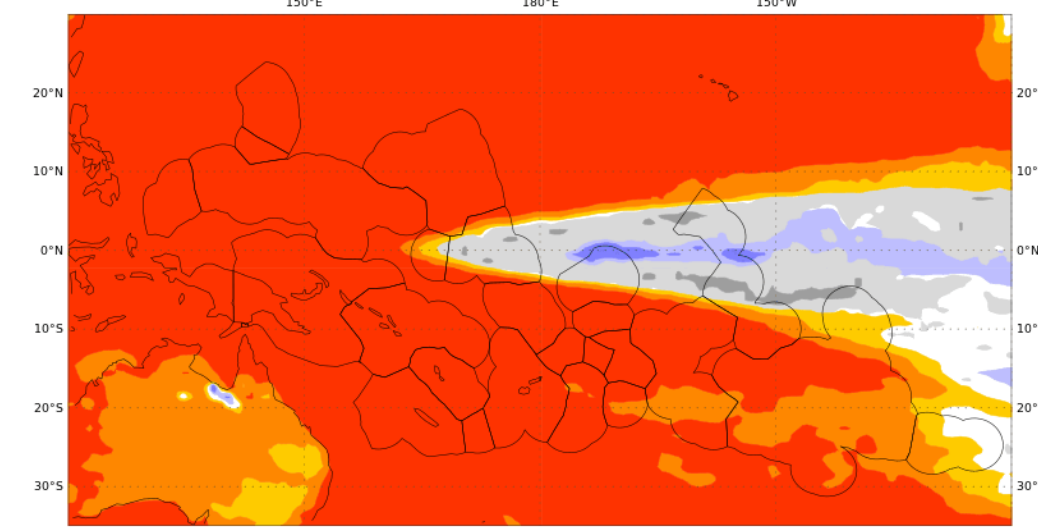
Beijing, Montreal, Seoul, Tokyo, Washington

### 2m Temperature : ASO2024

(issued on Apr2024)



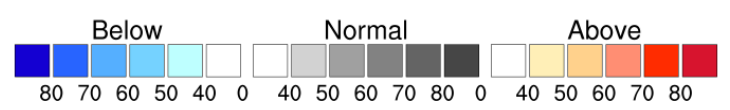
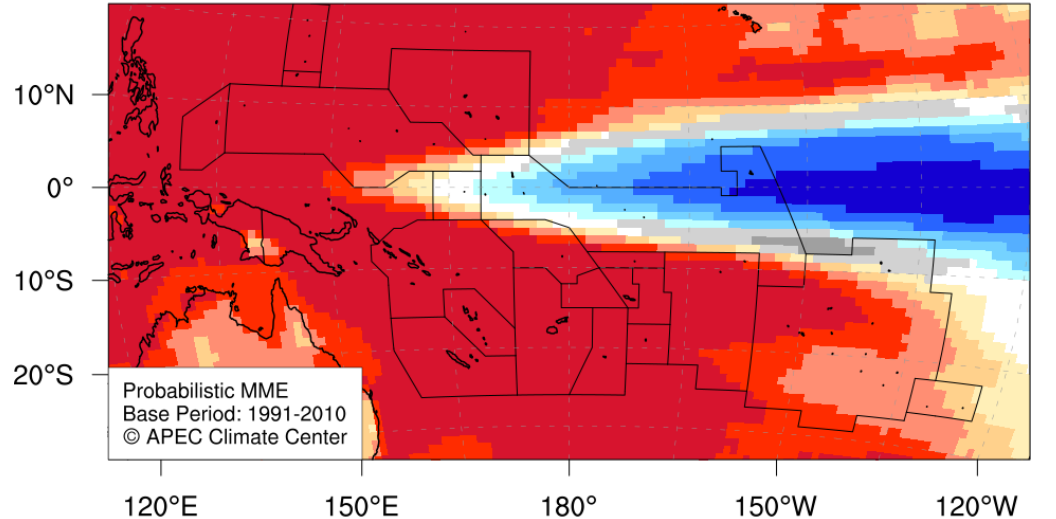
Meteo-France system 8 - Forecast  
For ASO 2024 (issued April 2024)



### Temperature at 2m for August-October 2024

Issued: 15 Apr 2024

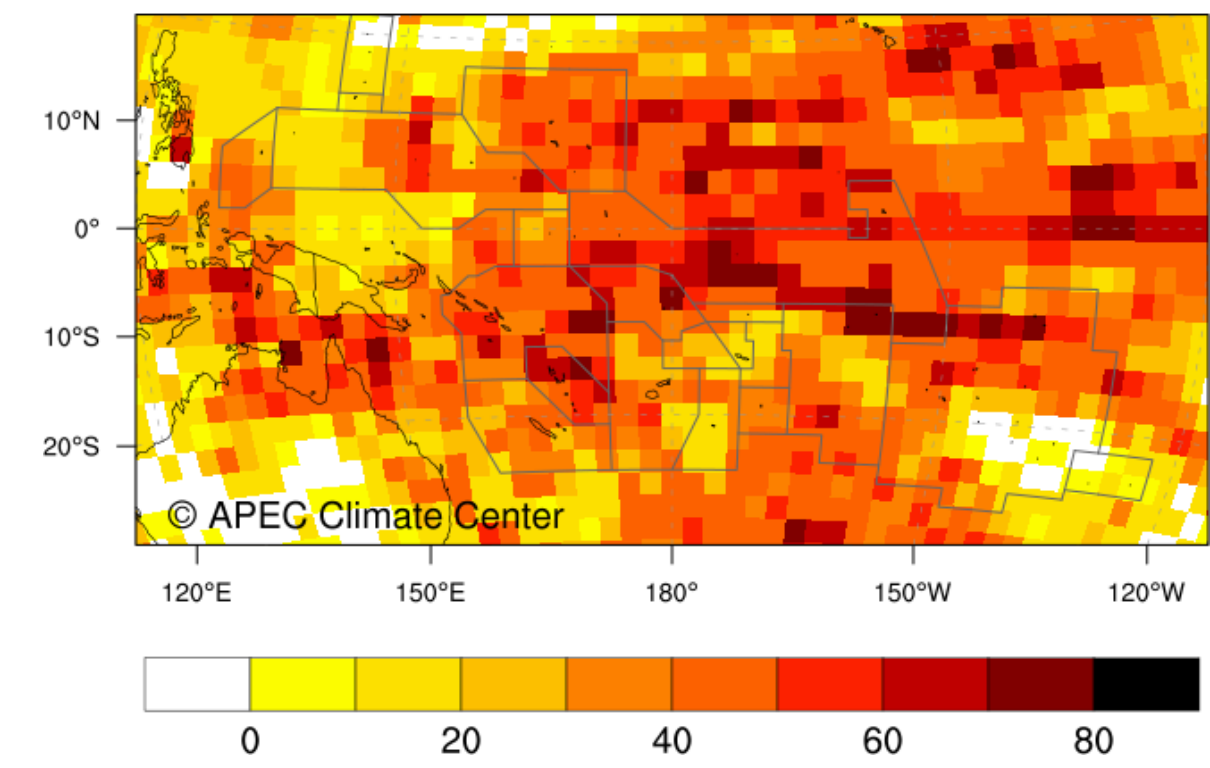
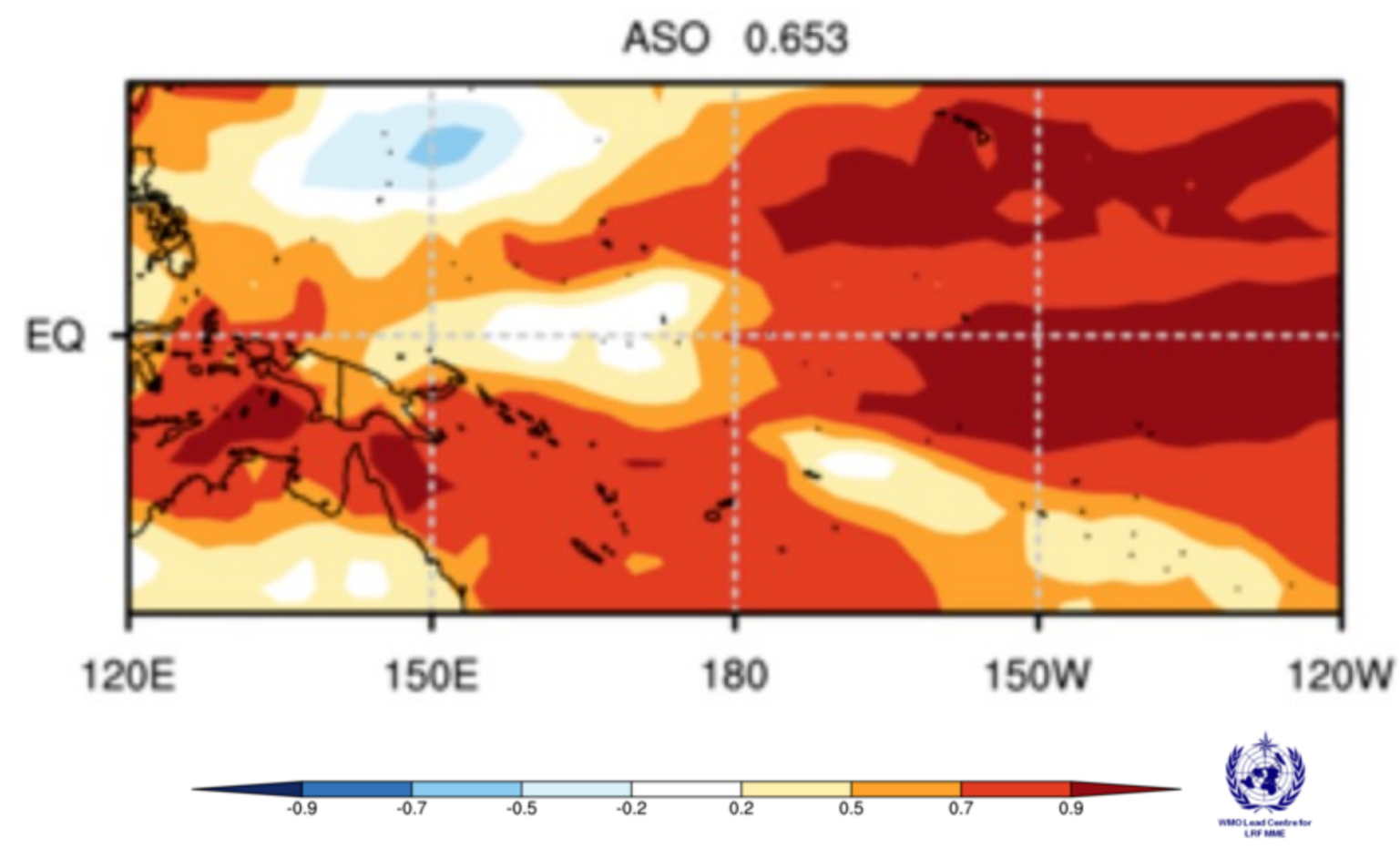
Unit: % (Probability)





# Aug-Oct temperature: WMO LRF-MME & other models - skill

Heidke Skill Score : T2M, ASO (1991-2010)





# Summary

- Active Madden-Julian Oscillation in mid-to-late April; awareness around possible tropical cyclone development in western part of region (however, short-range models not showing an intense system)
- Stronger-than-normal easterly trade winds favoured over the next 3-6 months, northerly toward the equator
- May-July rainfall favoured to be below normal in the off-equatorial South Pacific, along the equator (a change from previous seasons), and in the northwest Pacific; note, models vary in the intensity and coverage of below normal rainfall near equator
- May-July rainfall favoured to be above normal in an area extending from PNG to the Tuamotu Archipelago & narrow corridor from southern Palau to southern Marshall Islands
- May-July rainfall skill is generally good across the region, highest along the equator - be aware of Northern Hemisphere “spring predictability barrier” when it comes to ENSO & slightly lower model skill during ENSO neutral periods
- May-July temperatures favoured to be above normal in all countries (continuation of recent warmth)
- August-October rainfall favoured to be below normal near the equator & in parts of the northwest Pacific (potential for consecutive drier than normal seasons in some groups) and normal or above normal in the off-equatorial South Pacific (La Niña-like pattern developing)
- August-October temperatures favoured to be above normal except in Kiribati (continuation of recent warmth)







# Thank You

