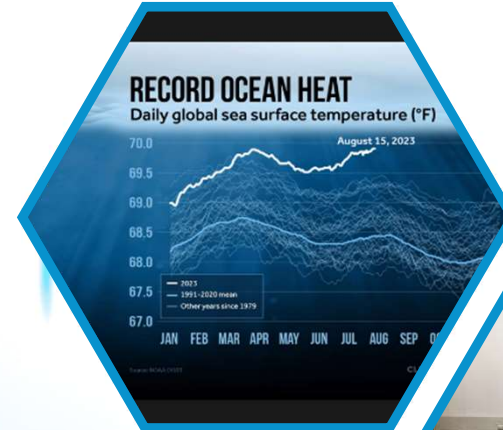


15TH SESSION OF THE PACIFIC ISLANDS CLIMATE OUTLOOK & STAKEHOLDER FORUM

PICOF-15

14 - 15 OCTOBER, 2024

HYBRID
IN-PERSON: NUKU'ALOFA, TONGA
ONLINE: ZOOM



PICOF-15

SESSION 4: LOOKING FORWARD

I. ATMOSPHERE

Alexandre PELTIER

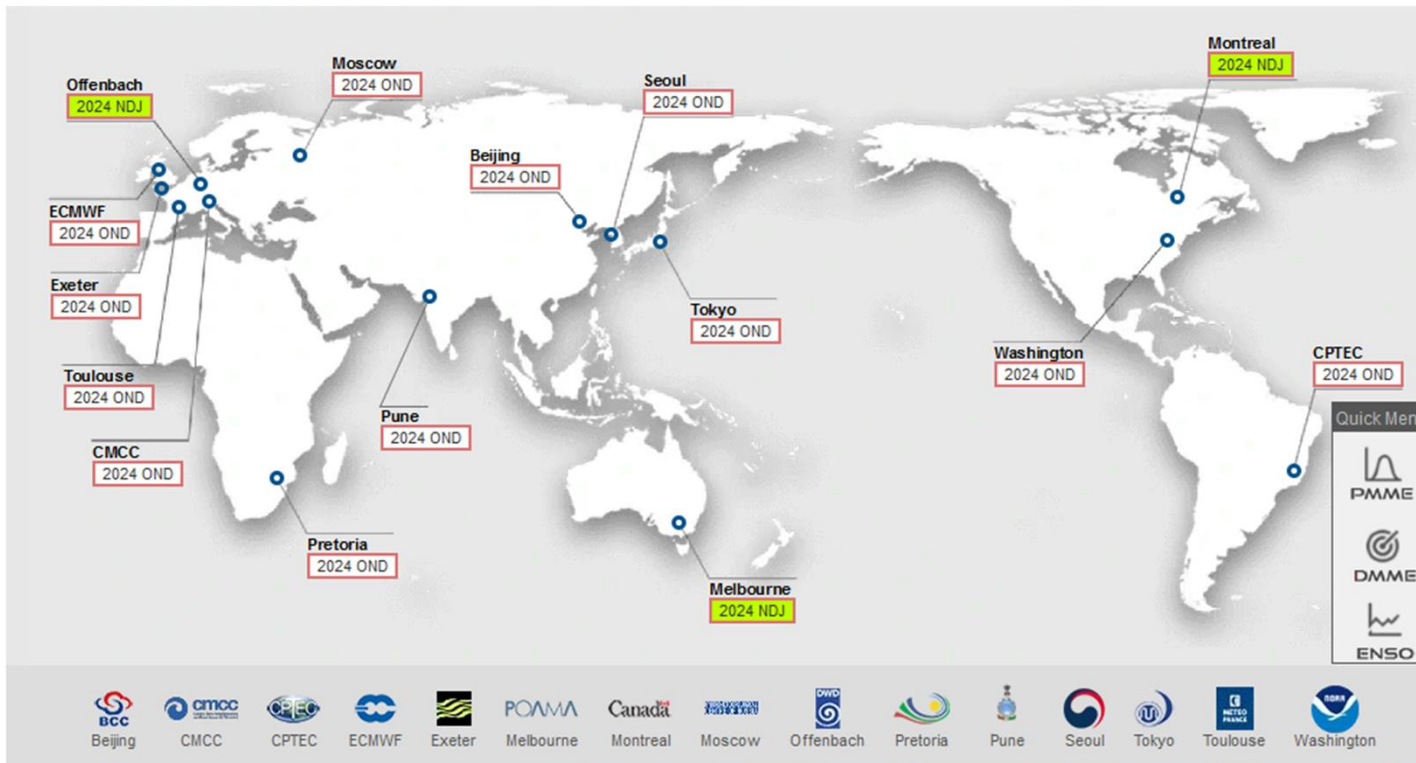
Météo-France, New Caledonia, Wallis-and-Futuna



- MME: Multi Model Ensemble
- LC: Lead Center
- GPC: Global Producing Centers

WMO Lead Centre for Long Range Forecast Multi Model Ensemble

Latest forecast data



- WMO LC MME official outlooks for PICOF
- WMO LC MME based on 15 GPC LRF models
- Global seasonal forecast are disseminated around 15th of every month

PRECIPITATION OUTLOOK

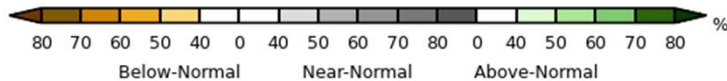
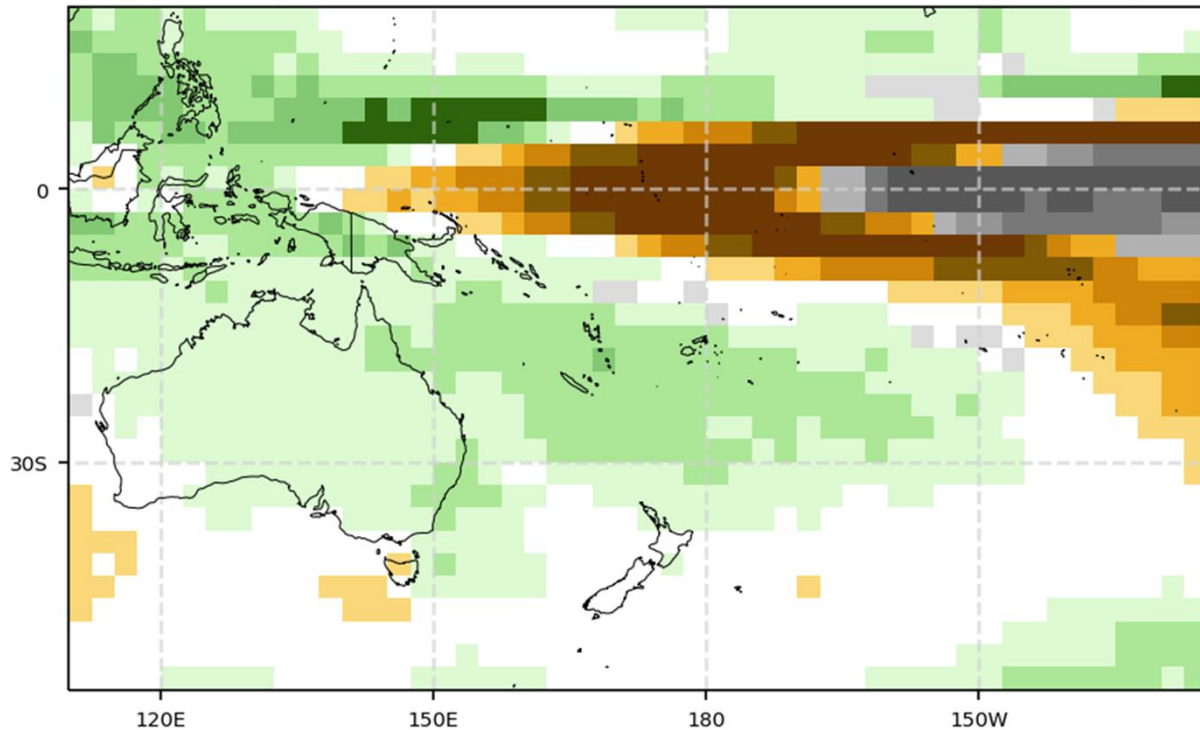
WMO LRF MME for NDJ 2024 (issued in Sep.)

Probabilistic Multi-Model Ensemble Forecast

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

Precipitation : NDJ2024

(issued on Sep2024)



Outlook confidence increases with stronger tercile colours

Below normal rainfall is *likely* for Tuvalu, Tokelau, Northern Cook Islands.

The outlook *strongly* favours below average rainfall for Nauru, Kiribati (Gilbert and Phoenix Islands) and the Marquesas.

Above normal rainfall is *likely* for :

- Palau, FSM (Yap, Chuuk, Pohnpei, Kosrae)
- PNG, New Caledonia, Vanuatu (except Torba), Fiji (except Rotuma), Tonga, Niue, Southern Cook Islands

Near normal rainfall is *likely* for Kiritimati

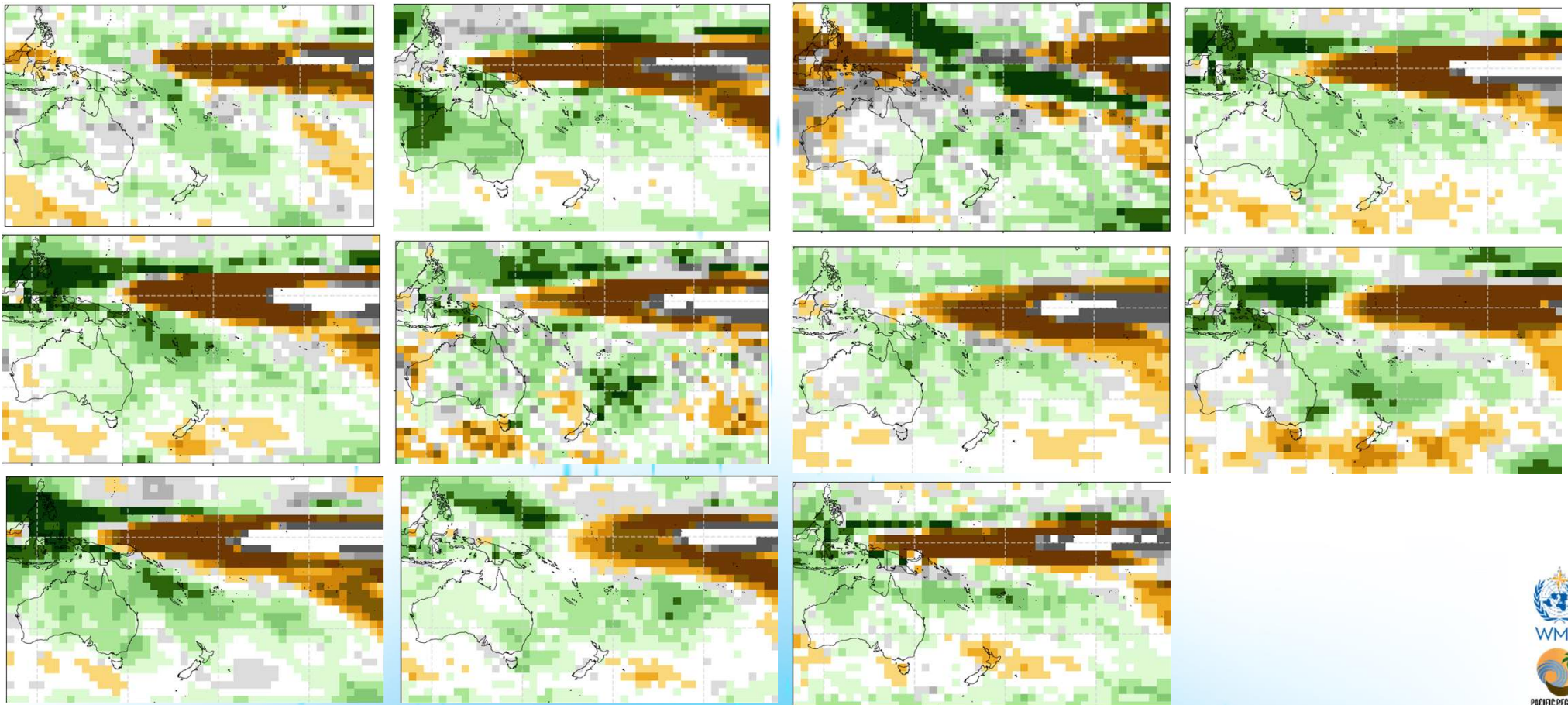
No clear guidance for :

- Guam, Northern Mariana Islands, Marshall Islands
- Solomon Islands, Torba, Rotuma, Wallis-and-Futuna, Samoa, American Samoa, French Polynesia, Pitcairn.



MME : Spot the Differences Game For Meteorologists

The multi-model ensemble mean represents those features of seasonal forecast anomalies that survive ensemble averaging and so are common to models as a group.



Previous outlooks : what was expected and what actually happened ?

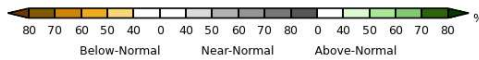
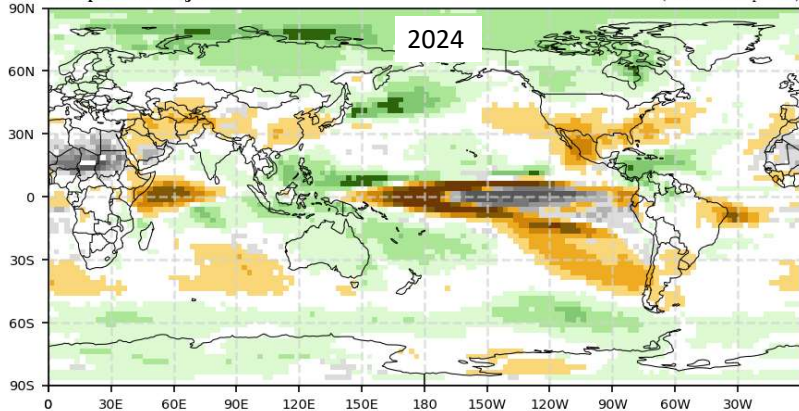
[La Niña has occurred 5 times over the last decade.](#)
 What did the forecasts for these past events look like ?

Probabilistic Multi-Model Ensemble Forecast

Beijing, Beijing, CMCC, CMCC, CPTEC, CPTEC, ECMWF, ECMWF, Exeter, Exeter, Melbourne, Melbourne, Montreal, Montreal, Offenbach, Offenbach, Seoul, Seoul, Tokyo

Precipitation : NDJ2024

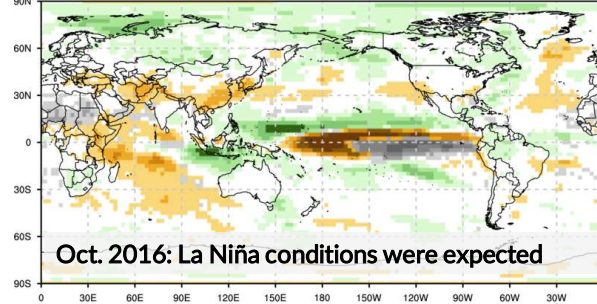
(issued on Sep2024)



WMO Lead Centre for LRF MME

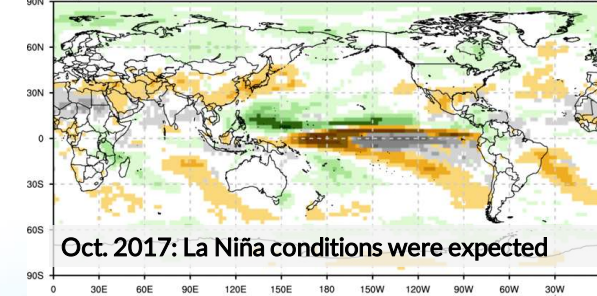
Probabilistic MME

Precipitation : NDJ2016 (issued on Oct2016)



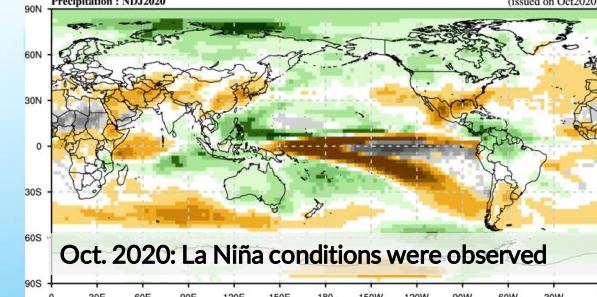
Oct. 2016: La Niña conditions were expected

Precipitation : NDJ2017 (issued on Oct2017)

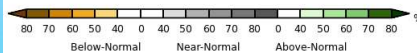


Oct. 2017: La Niña conditions were expected

Precipitation : NDJ2020 (issued on Oct2020)

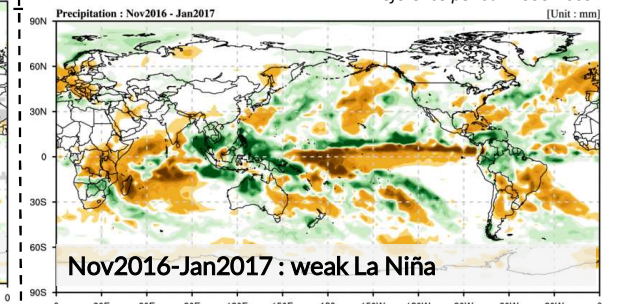


Oct. 2020: La Niña conditions were observed



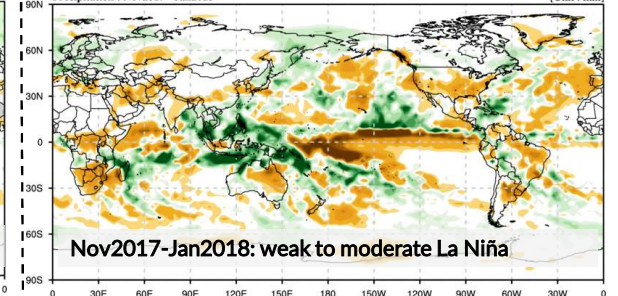
Observation (anomaly)

Reference period : 1993-2009



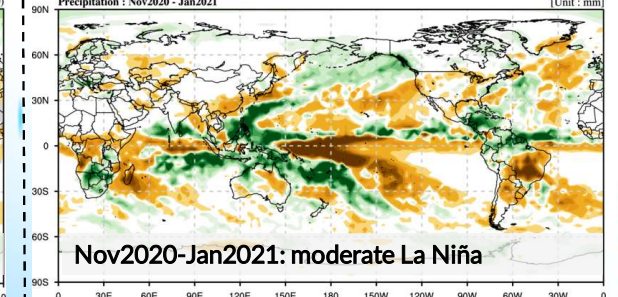
Nov2016-Jan2017 : weak La Niña

Precipitation : Nov2017 - Jan2018 [Unit : mm]

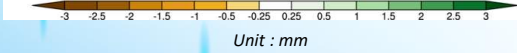


Nov2017-Jan2018: weak to moderate La Niña

Precipitation : Nov2020 - Jan2021 [Unit : mm]



Nov2020-Jan2021: moderate La Niña



Unit : mm



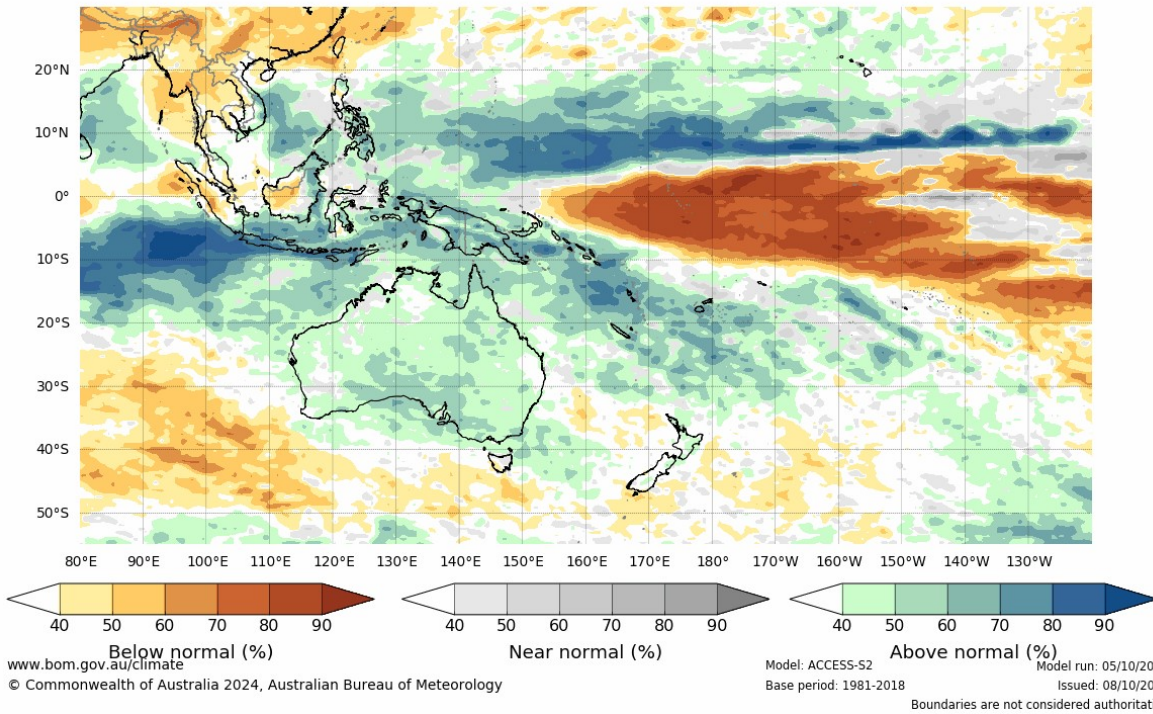
WMO

PACIFIC REGIONAL CLIMATE CENTRE NETWORK

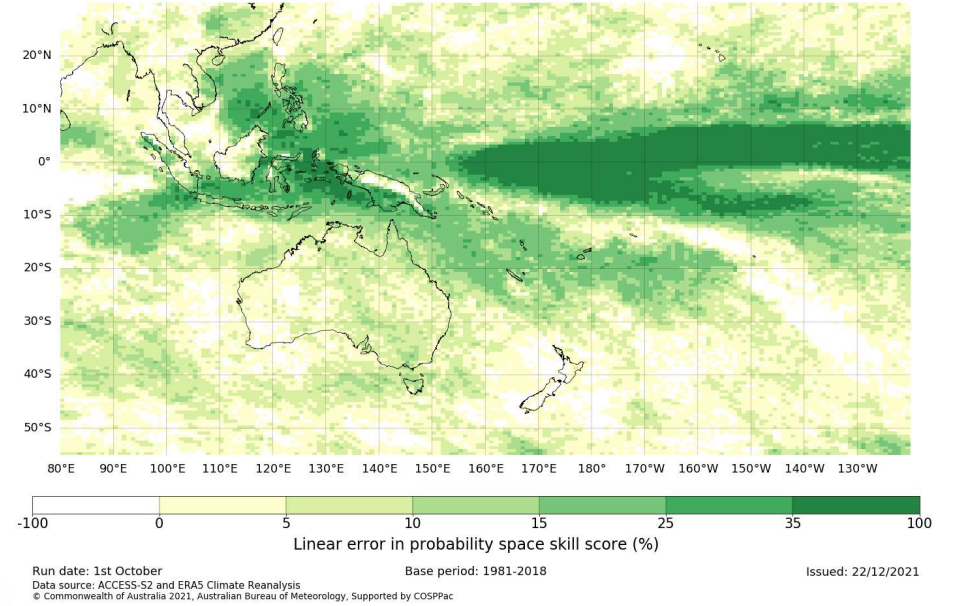
Melbourne ACCESS-S (issued in Oct)

How much credence should be given to these outlooks ?

Tercile rainfall probabilities for November 2024 to January 2025



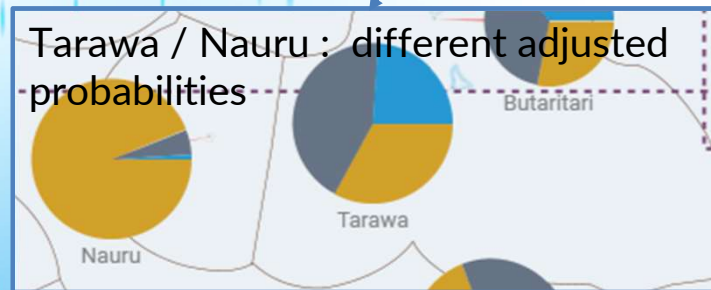
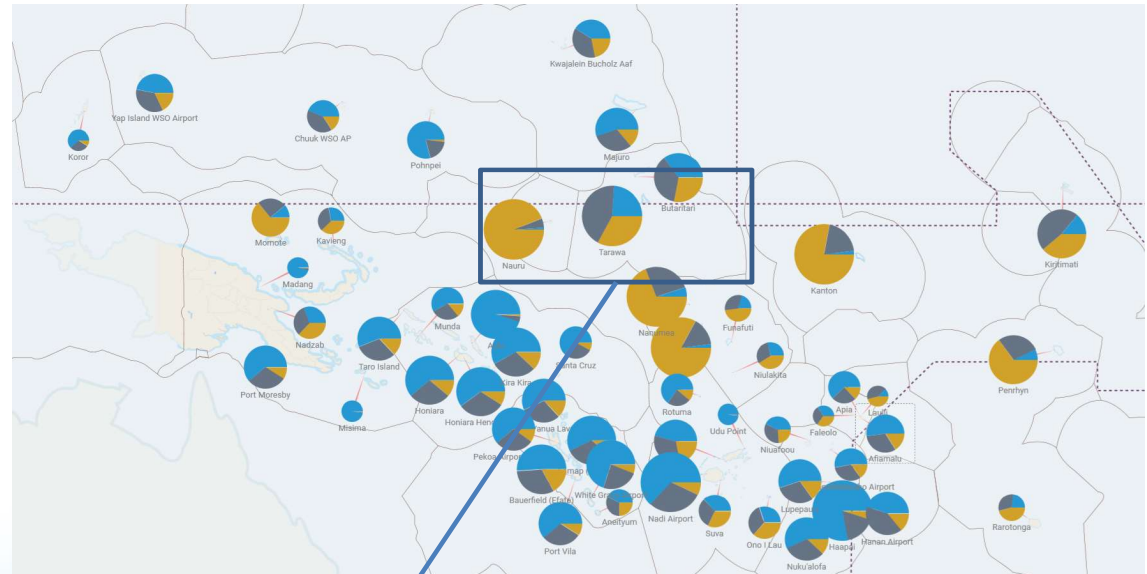
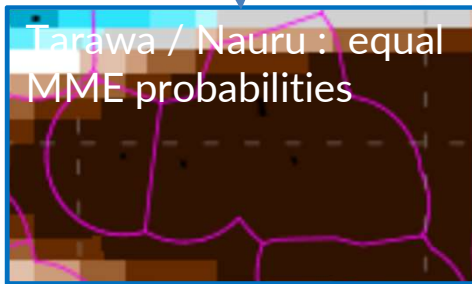
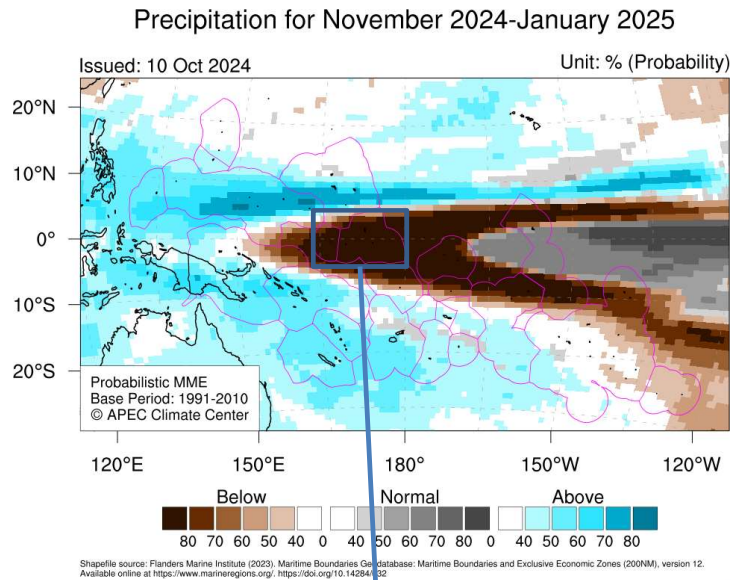
Tercile seasonal rainfall past accuracy for November - January. Lead time: 1 month



LEPS Value	Word
< 0	Very Low
0 - 5	Low
5 - 10	Moderate
10 - 15	Good
15 - 25	High
25 - 35	Very High
> 35	Yoda

APCC MME and PICASO tailored seasonal forecast (issued in Oct)

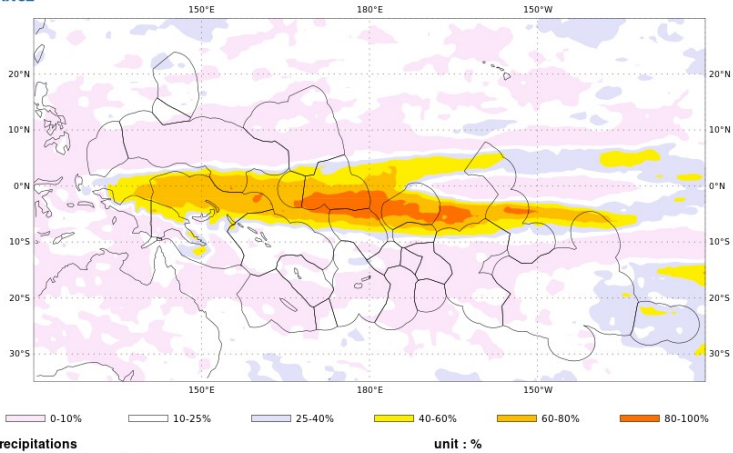
PICASO forecast is based on the APCC MME, and is tailored to the each target station taking into the uncertainties associated with forecast-observation relationship as well as MME dispersion.



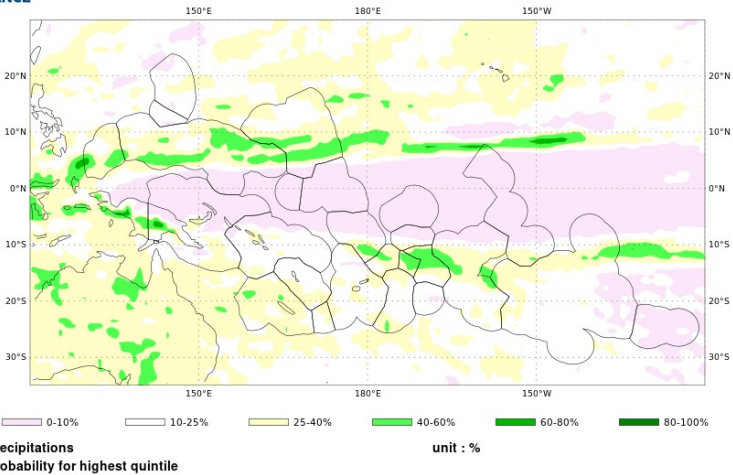
Where are the highest chances for very abnormal conditions ?



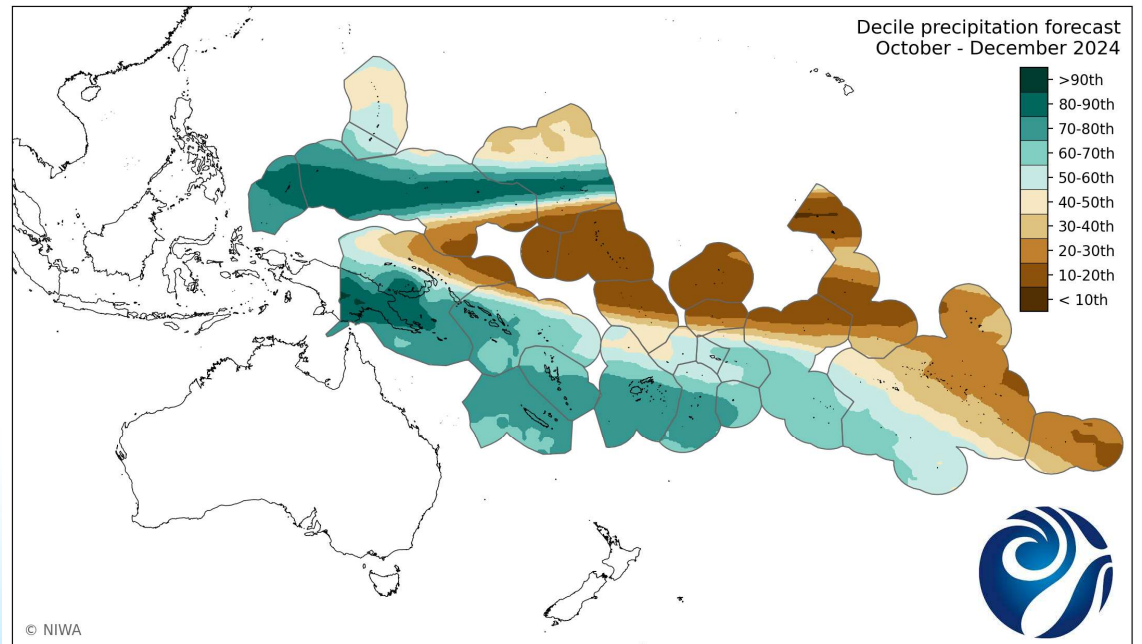
Meteo-France system 8 - Forecast
For NDJ 2024-2025 (issued October 2024)



Meteo-France system 8 - Forecast
For NDJ 2024-2025 (issued October 2024)



Does the coming La Niña provide a window of opportunity to issue a much more confident forecast for extreme conditions than average skill estimates would suggest ?



NIWA outlook based on C3S MME

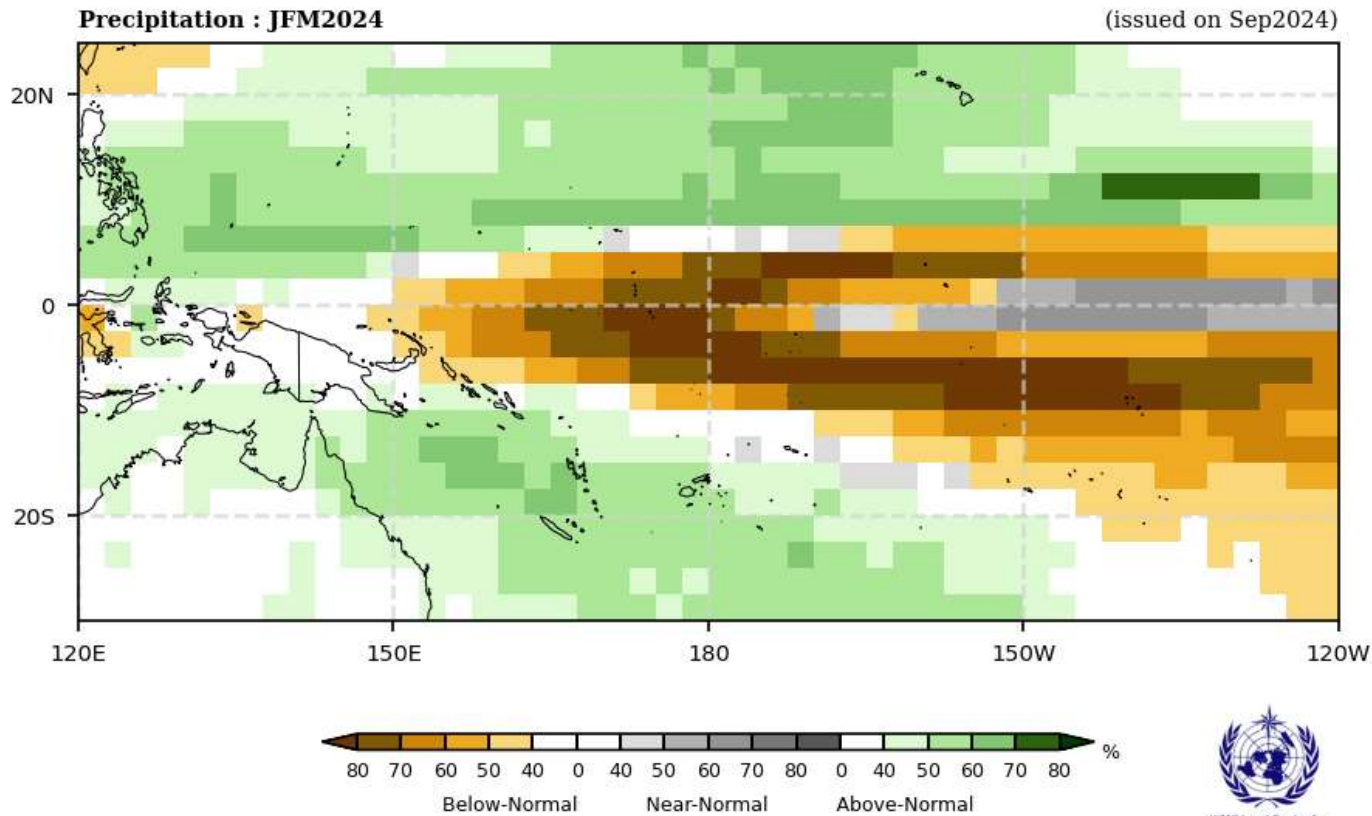
WMO LRF MME for FMA 2025 (coming soon !)

Above normal rainfall is *likely* for :

- Marshall Islands, Palau, FSM
- New Caledonia, Vanuatu (except Torba), Fiji (except Rotuma) and Tonga

No clear guidance for :

- Guam, Northern Mariana Islands
- PNG, Solomon Islands, Rotuma, Wallis-and-Futuna, Samoa, American Samoa, Niue, Southern Cook Islands, French Polynesia, Pitcairn.



The outlook *strongly* favours below average rainfall for Nauru, Kiribati (Gilbert and Phoenix Islands) and the Marquesas

Below normal rainfall is *likely* for Tuvalu, Tokelau, Northern Cook Islands and Kiritimati.



TEMPERATURE OUTLOOK

WMO LRF MME for NDJ 2024 (issued in Sep.) and FMA 2025 (coming soon !)

Probabilistic Multi-Model Ensemble Forecast

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

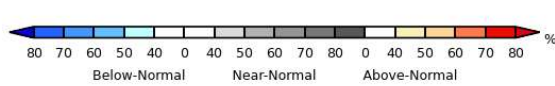
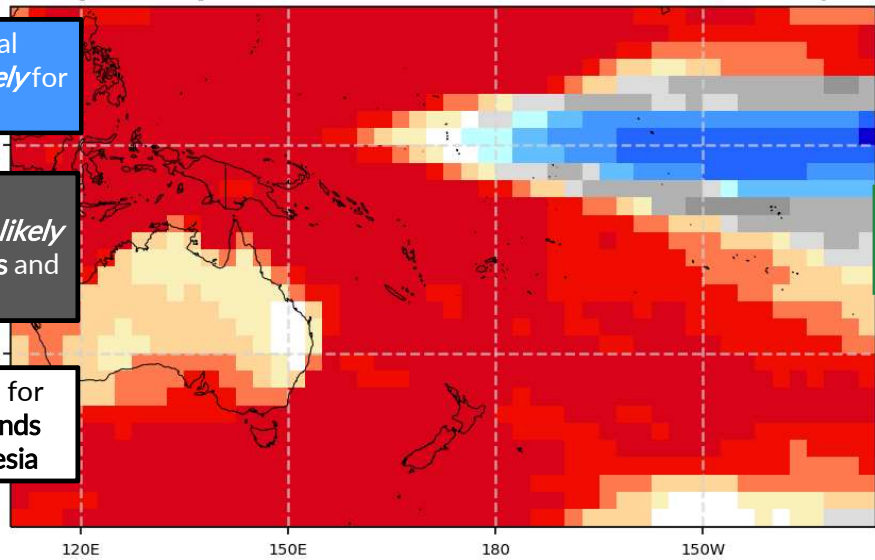
2m Temperature : NDJ2024 (issued on Sep2024)

Cooler than normal conditions are *likely* for Line Islands.

Near normal temperatures are *likely* for The Marquesas and Phoenix Islands.

No clear guidance for Nauru, Gilbert Islands and French Polynesia

Above normal temperatures are *very likely* elsewhere

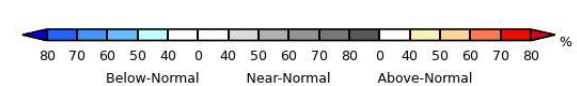
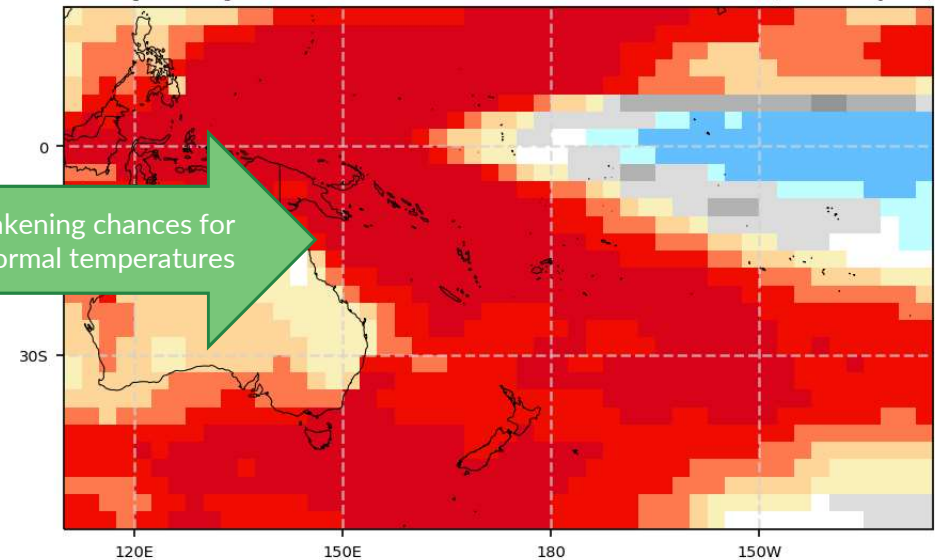


Probabilistic Multi-Model Ensemble Forecast

Beijing, Montreal, Seoul, Tokyo, Washington

2m Temperature : JFM2024 (issued on Sep2024)

Weakening chances for abnormal temperatures



Summary

Rainfall outlook over November 2024 to January 2025 is consistent with the expected impacts of La Niña.

- There is strong prediction of below-normal rainfall near the equatorial International Date Line between Nauru and Phoenix Islands, and further southeast in the Marquesas. Below average rainfall is expected for Tuvalu, Tokelau, Northern Cook Islands.
- Rainfall amounts are predicted to be near-normal in Kiribati.
- Farther south in the tropics, above-normal rainfall is favoured between southern PNG and Southern Cook Islands including New Caledonia, Vanuatu (except Torba), Fiji (except Rotuma), Tonga and Niue.
- In the northwest Pacific above-normal rainfall is also likely between Palau and eastern FSM.
- Confidence in this outlook is very high in the central equatorial Pacific and fairly high in the subtropical Pacific.
- No clear guidance between Solomon Islands southeastwards to Pitcairn including Torba, Rotuma, Wallis-and-Futuna, Samoa, American Samoa and most islands of French Polynesia. The outlook is just as indecisive for Guam, Northern Mariana Islands and Marshall Islands

The La Niña-like rainfall outlook pattern broadly continues over January to March 2025, yet the likelihood for abnormal conditions decreases. For this period there is a wet outlook for Marshall Islands. A **significant** increase in the likelihood for below-normal rainfall is expected for Kiribati.

The temperature outlook is less nuanced. Widespread above-normal temperatures are favoured over all the Pacific islands outside of the near-equatorial eastern Pacific Ocean.



KOMMŪŌL!

MALO!

감사합니다

FA'AFETAI!

KE KMAL MESAUL!

TENKYU TRU!

MAURUURU!

OLETI!

VINAKA!

KO RABWA!

MEITAKI!

FAKAFETAI!

FAKAUE IAHI!

TUBWA!

I would like to thank WMO, APCC, NIWA, BoM and SPREP for making the data available.