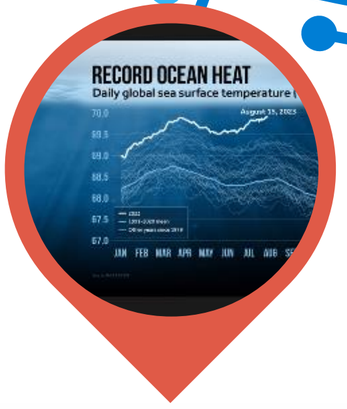
16TH SESSION OF THE PACIFIC ISLANDS CLIMATE OUTLOOK FORUM

PICOF-16

23 APRIL 2025

ONLINE: ZOOM



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REVIEW AND EVALUATION OF ATMOSPHERIC CONDITIONS (NOVEMBER TO APRIL)

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Presentation Outline

- Review of PICOF – 15 Outlook
- Synoptic drivers (SPCZ/ITCZ/monsoon trough)
- Air pressure and wind flow patterns
- Rainfall and temperature forecasts vs observations
- Madden- Julian Oscillation/ Velocity Potential
- Key Points /takeaways

Review of PICOF-15 predictions

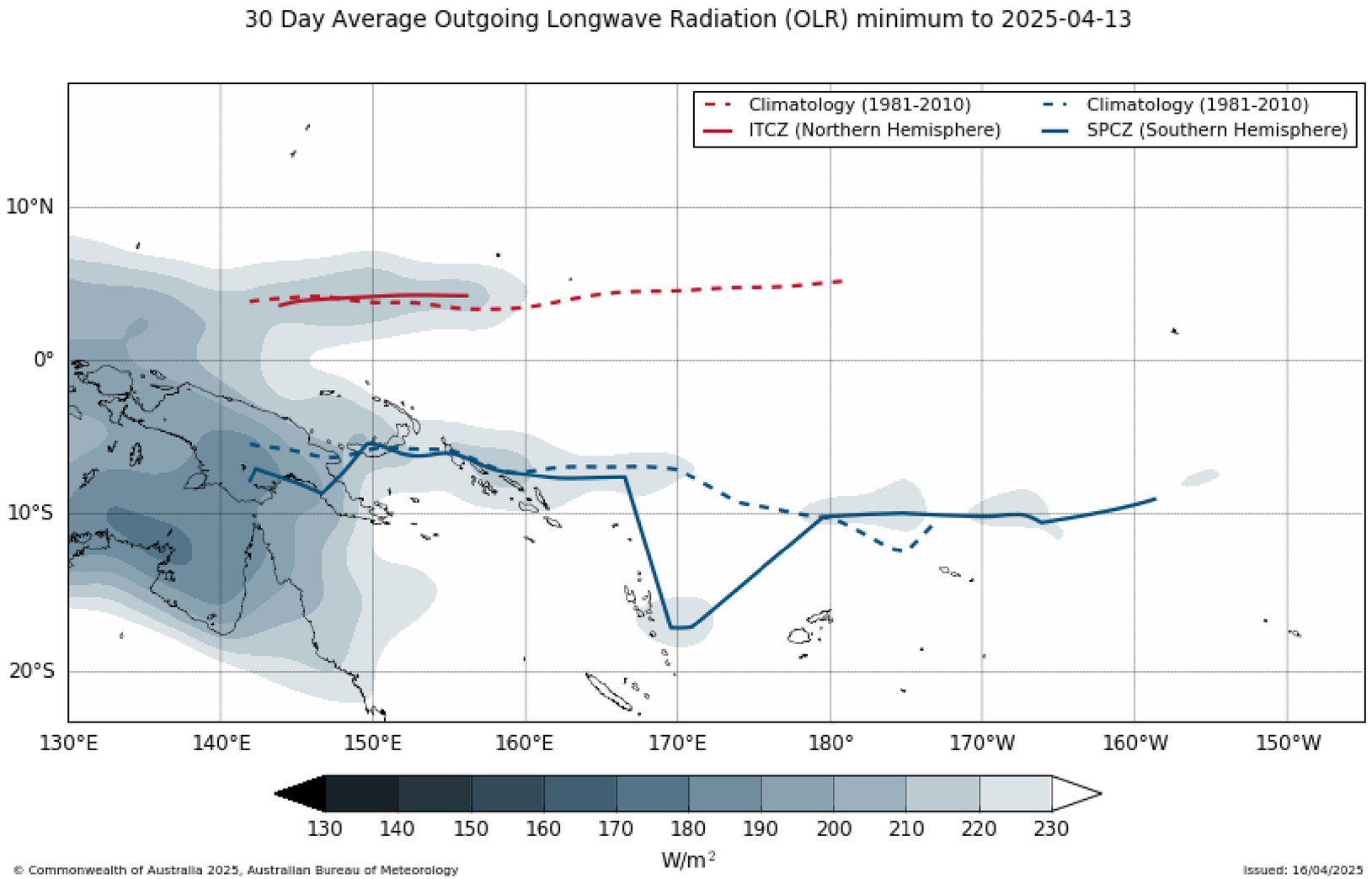
El Niño Southern Oscillation (ENSO)

- ✓ La Niña-like patterns for the remainder of 2024 and early 2025, regardless of whether criteria was met.
- ✓ The La Niña-like rainfall outlook pattern is forecast to continue over January to March 2025, noting model skill is reduced at this lead time.

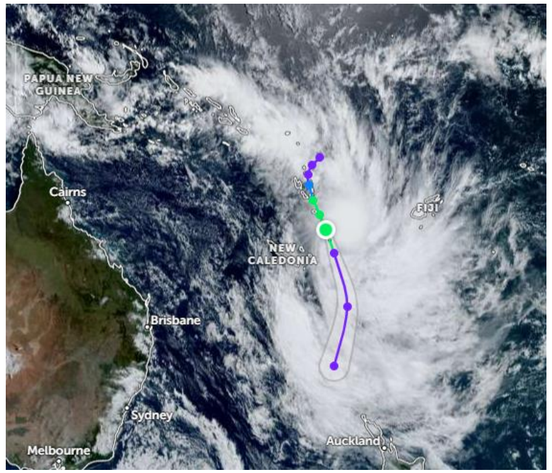
Rainfall and Air Temperature

- ✓ Below normal rainfall in the equatorial Pacific between Nauru and Phoenix Islands (Kiribati), as well as Marquesas Islands (French Polynesia).
- ✓ Below average rainfall for southernmost FSM and RMI, Tuvalu, Tokelau, Northern Cook Islands and northern French Polynesia.
- ✓ Above-normal rainfall between southern PNG and the southern Cook Islands including New Caledonia, Vanuatu, Fiji (except Rotuma), Tonga and Niue.
- ✓ Above-normal rainfall is likely between Palau and eastern FSM.
- ✓ Widespread above normal temperatures are favoured over all the Pacific islands outside of the near equatorial eastern Pacific.

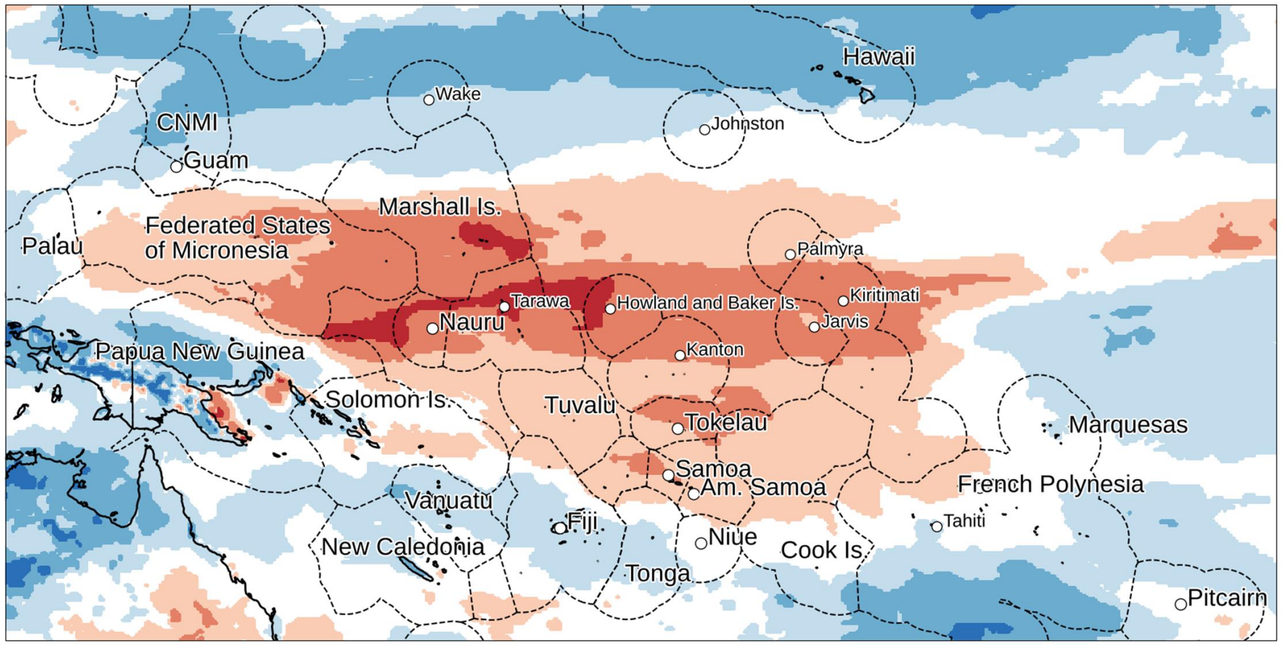
SPCZ/ITCZ/Monsoon Trough

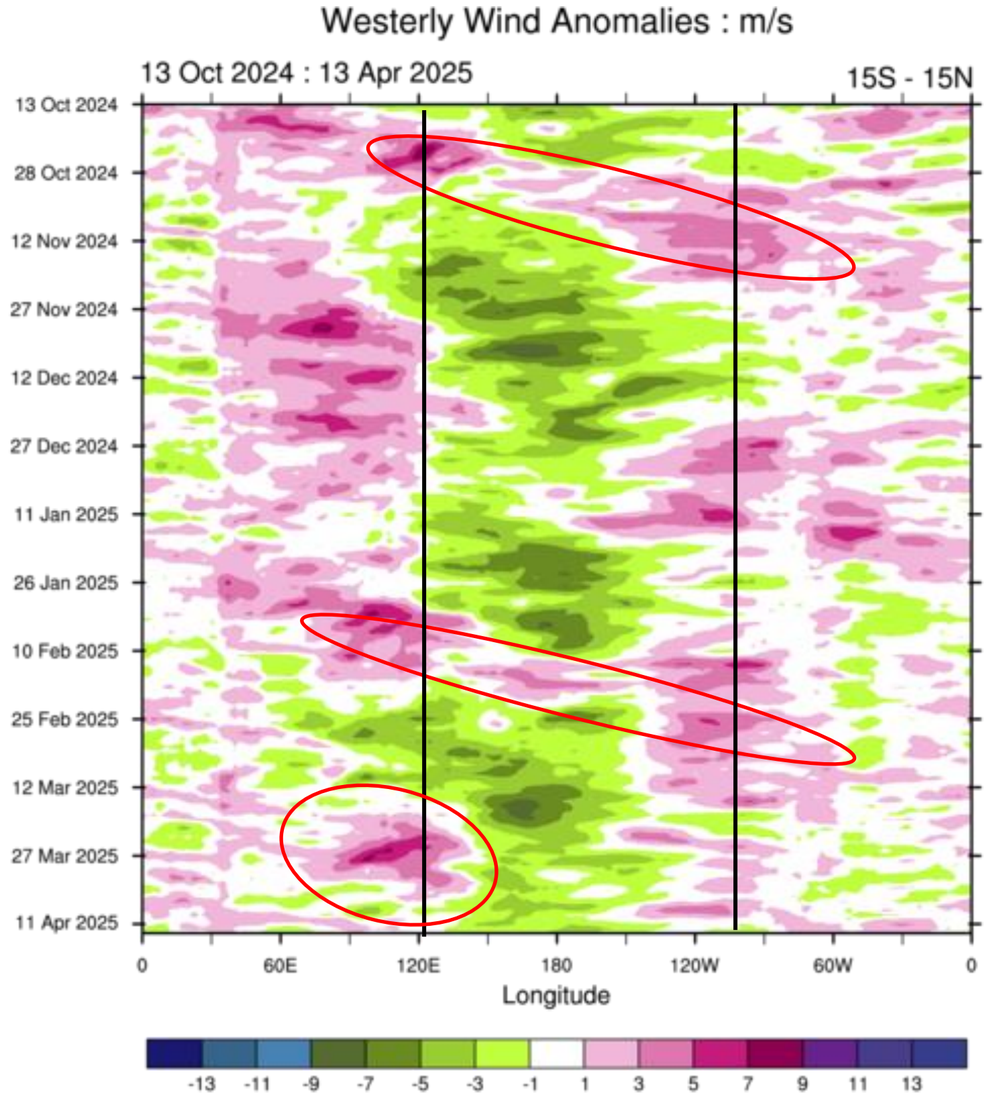


- The ITCZ is very close to the western position of the 1981-2010 climatology.
- Earlier SPCZ has followed the climatology western position – but taken a dramatic dip towards Vanuatu around the timing of TC Tam formation.
- Recent observations have seen the SPCZ realign with the climatology in the central Pacific.



Zonal Wind

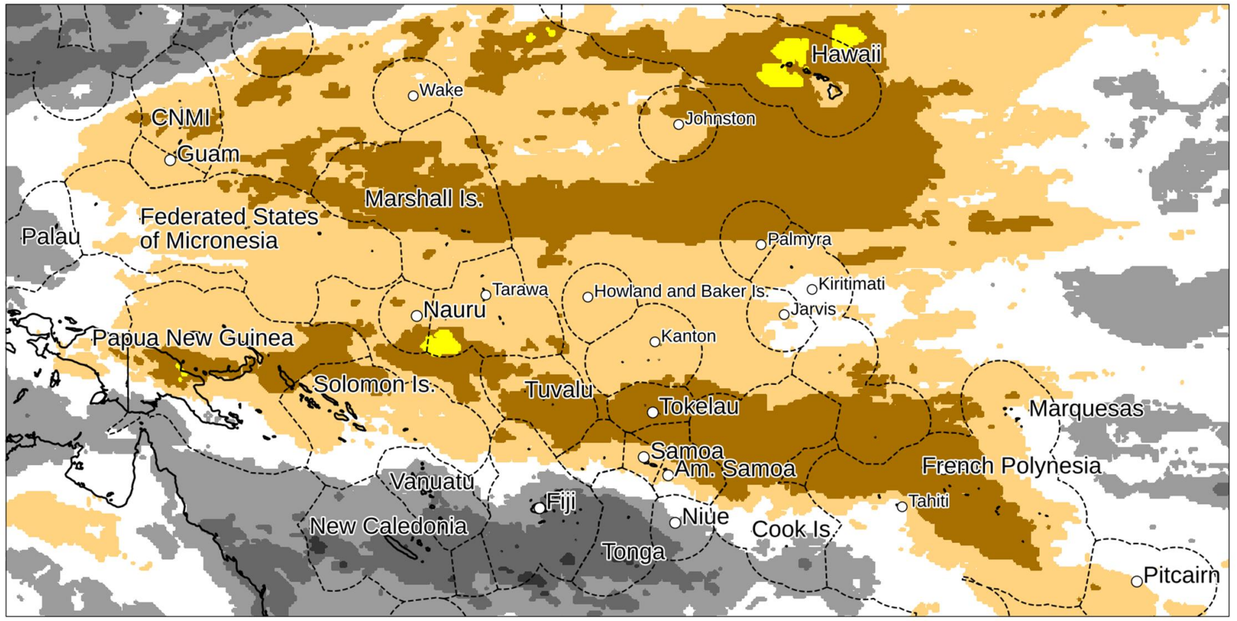


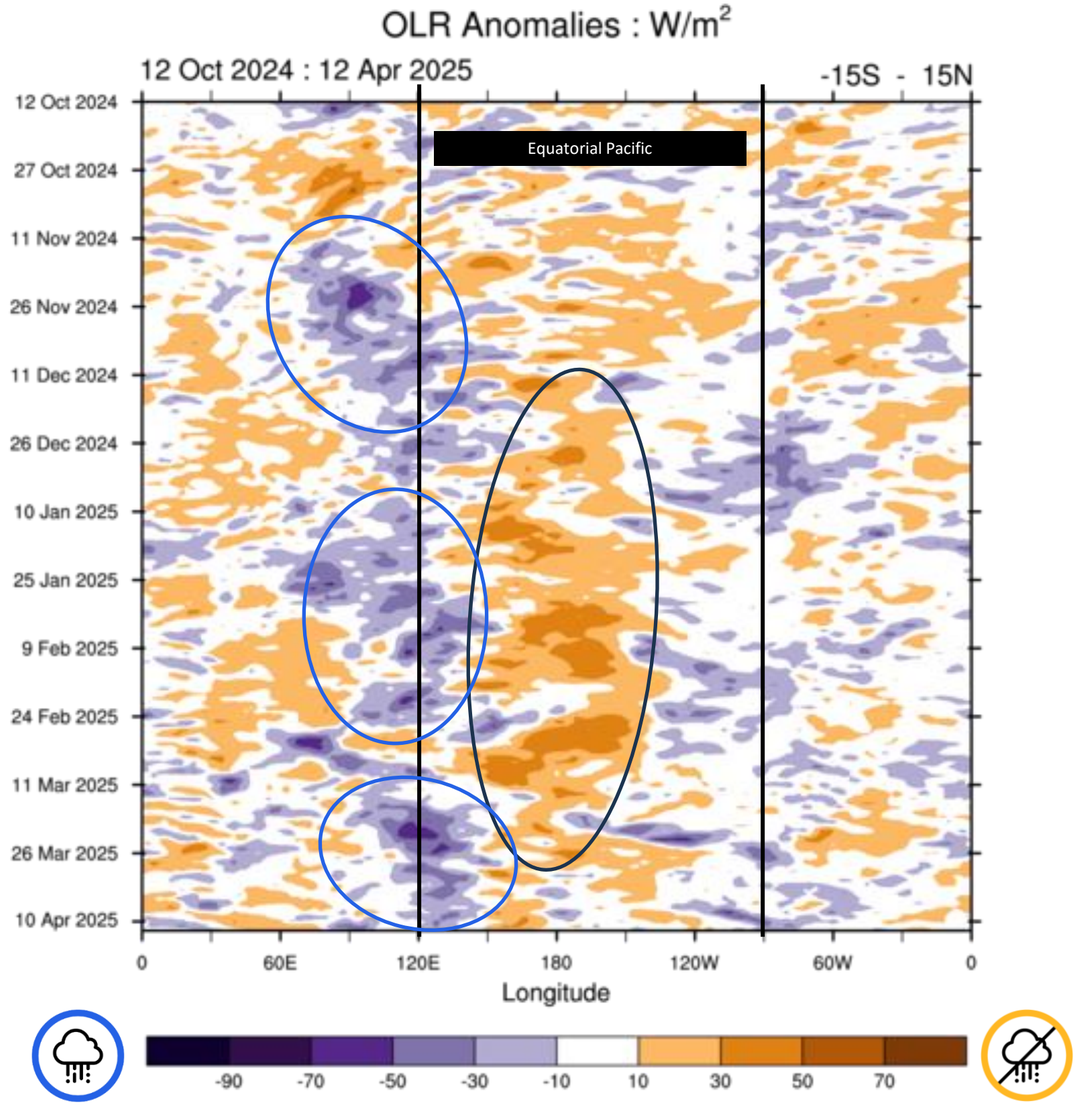


Easterly (stronger trade)

Westerly (weaker trade)

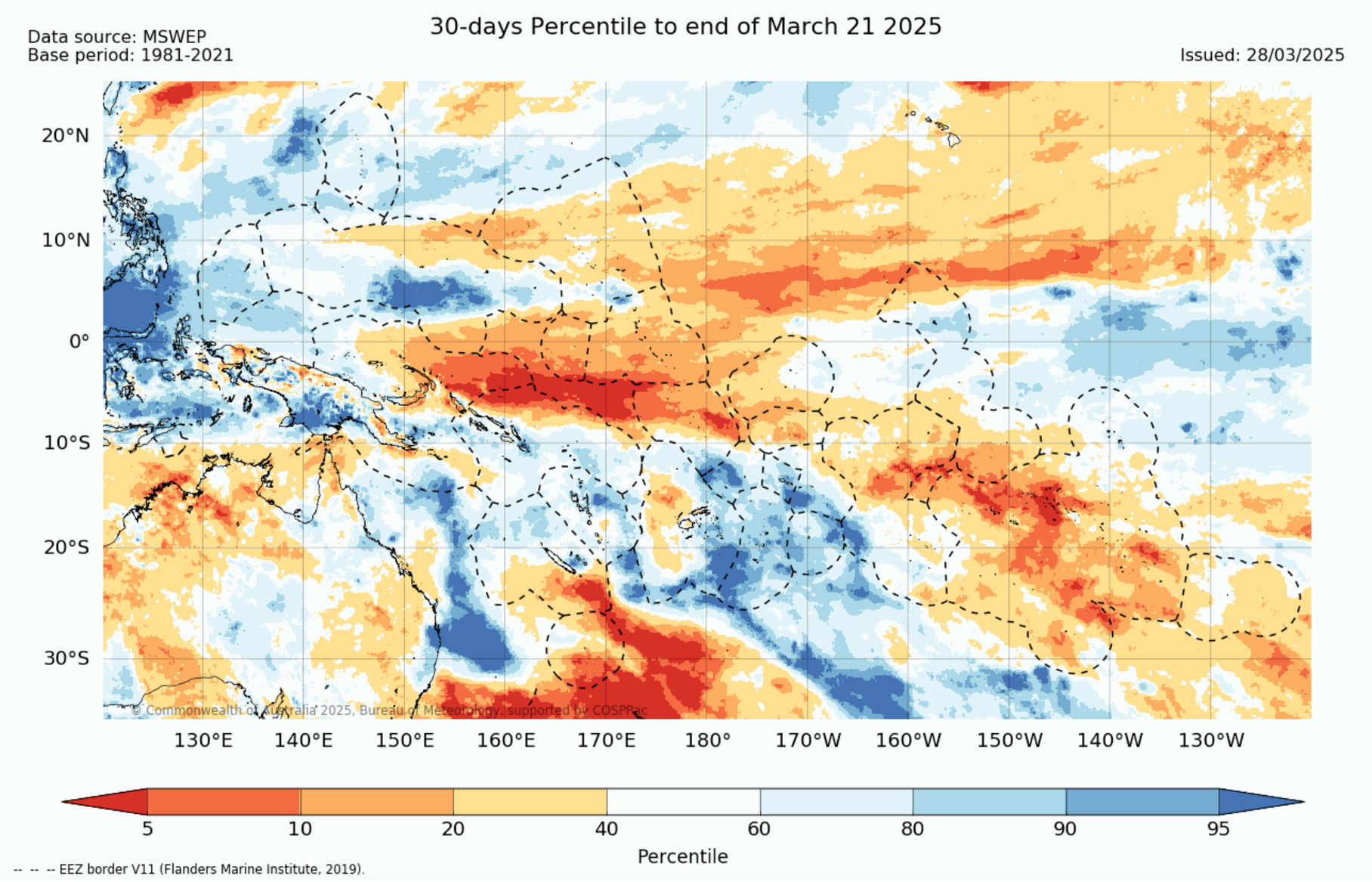
Cloudiness





- Persistent dry conditions around equatorial Pacific
- Enhance wet conditions around Indonesian Latitudes and southern, west Pacific.

Who has been wet and who has been dry?



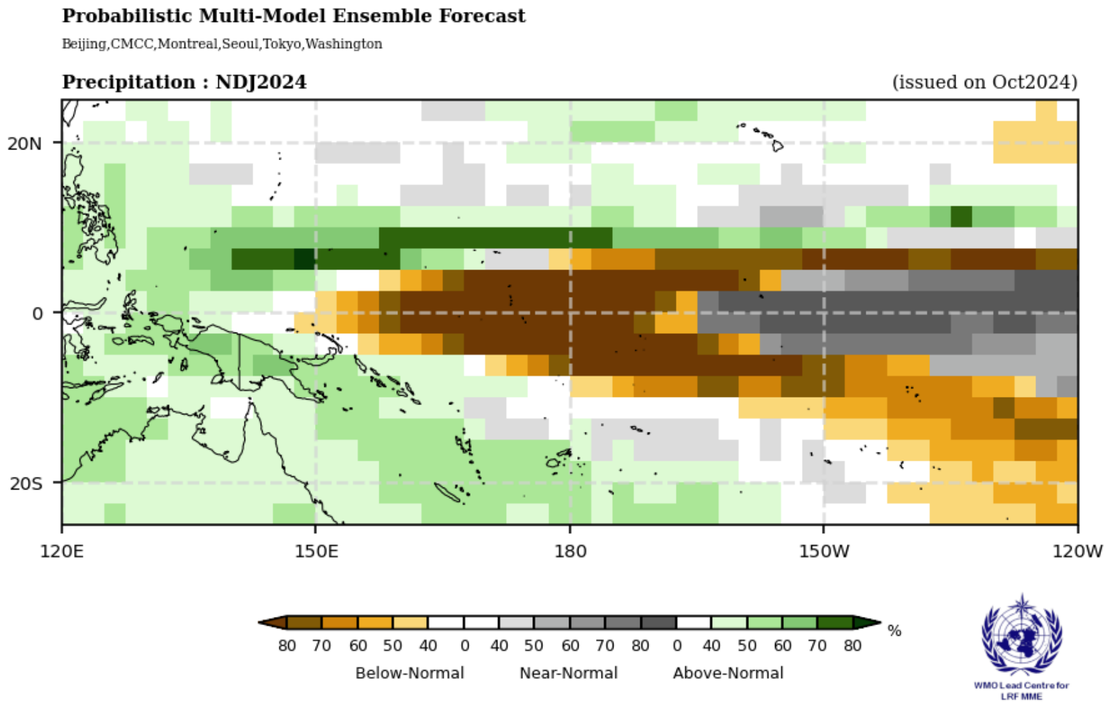
Drier than normal:
French Polynesia, Marshall Is, Nauru, Kiribati, southern New Caledonia, western Fiji, Tuvalu, northern PNG, Solomon Is., Cook Is., Pitcairn Is., southern FSM,

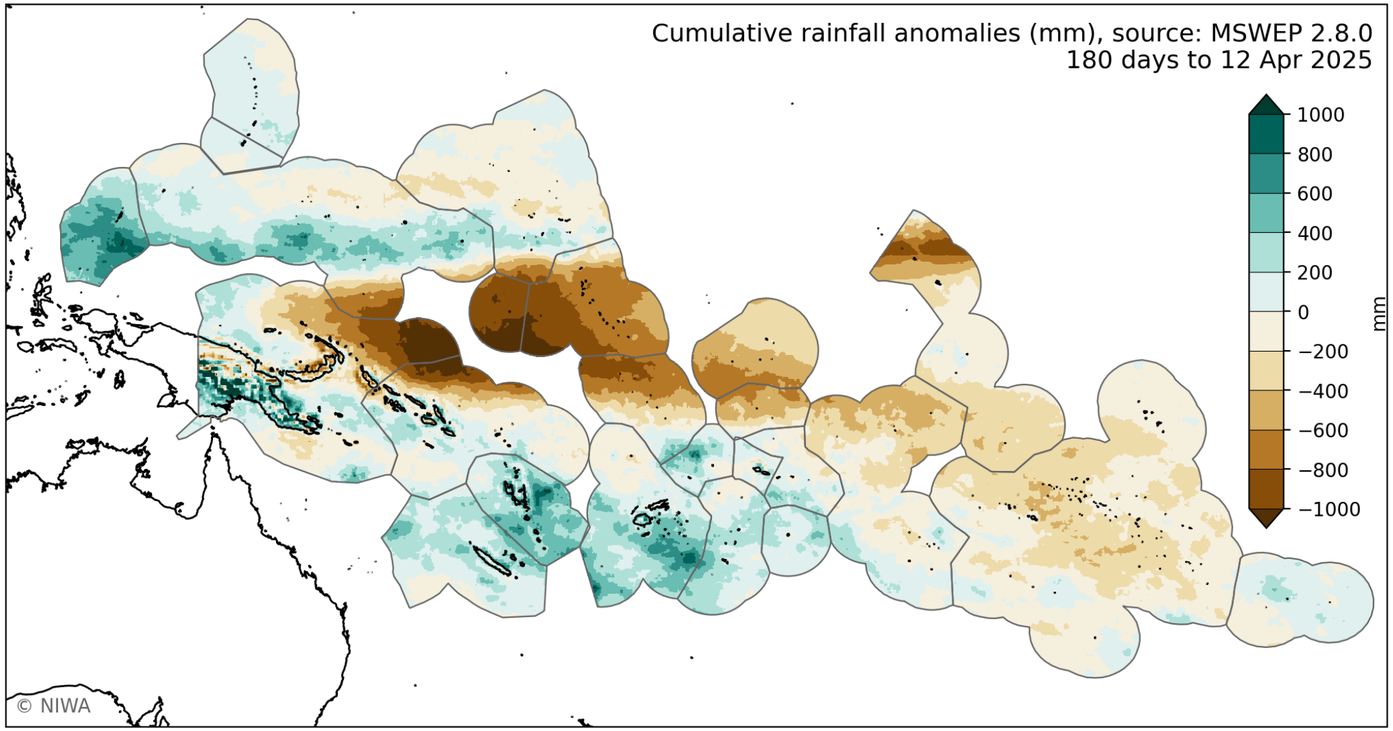
Extremely dry: Central French Polynesia, Tuvalu, southern New Caledonia, Nauru, western Kiribati, eastern PNG.

Wetter than normal:
CNMI, Guam, Palau, Vanuatu, northern New Caledonia, north-eastern Kiribati, eastern Cook is.

Extremely wet:
W&F, Samoa, A. Samoa, Niue, Tonga, southern Fiji, central FSM, southern PNG.

Rainfall Outlook vs Observations



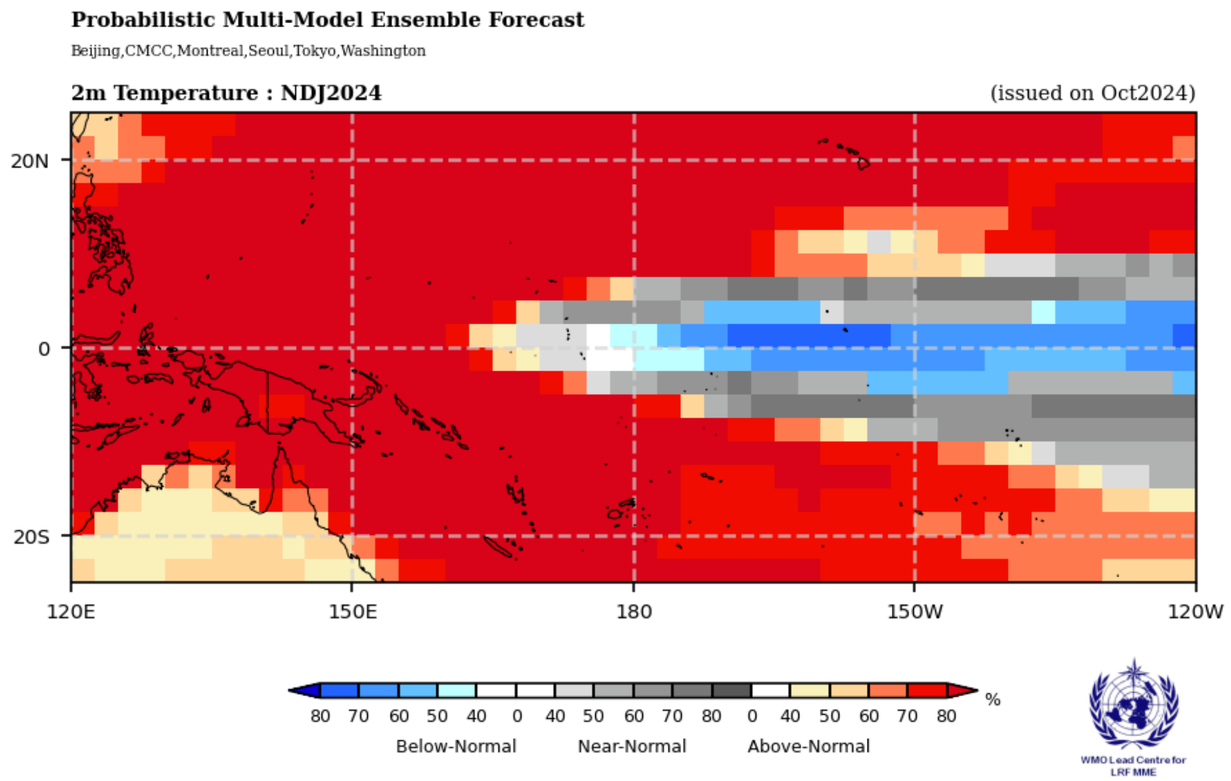


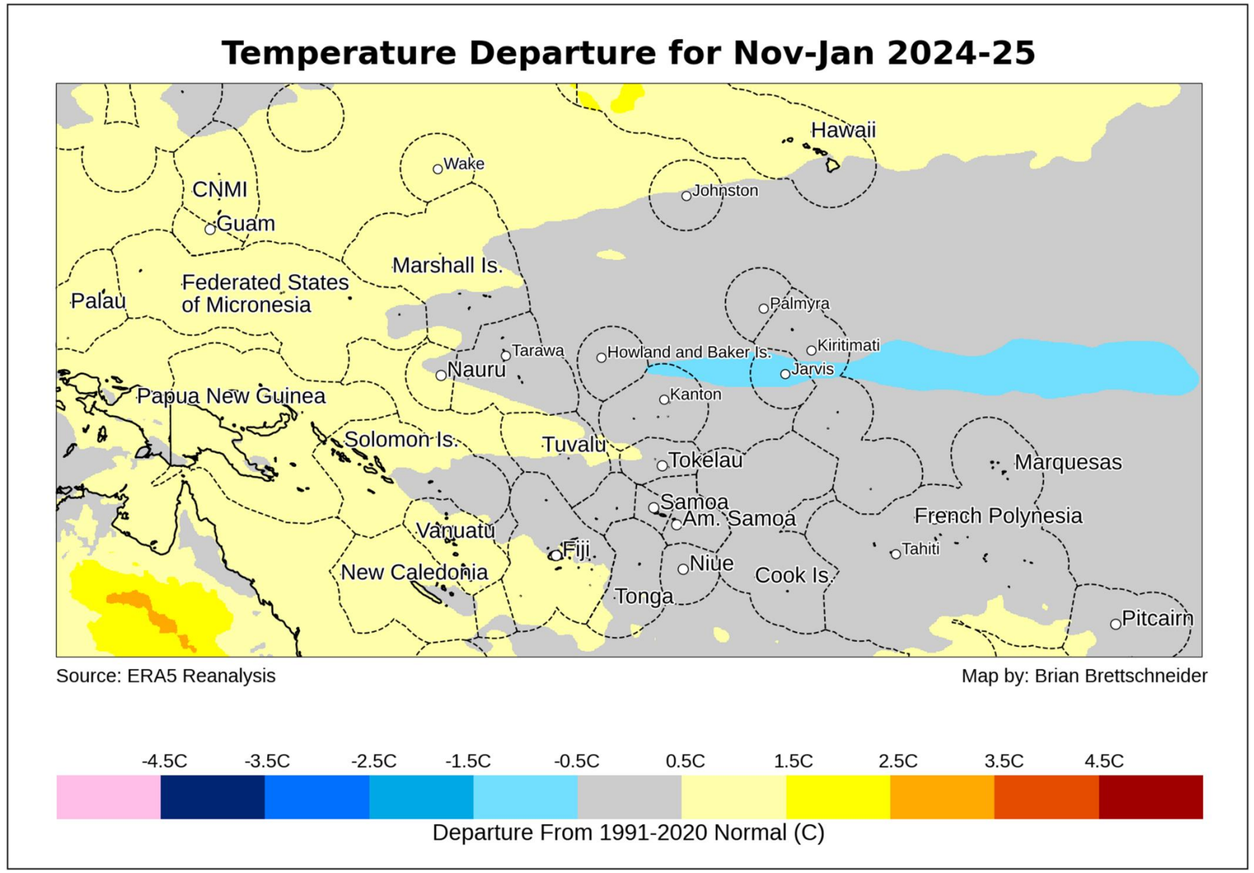
- Below normal rainfall for equatorial and southeastern Pacific.
- Near normal rainfall for eastern central Pacific.
- Above normal rainfall for north and southwestern Pacific.

Extremely dry (<-800 mm) Nauru, eastern Kiribati, North-eastern PNG and Solomon Is.

Extremely Wet (>600 mm) Palau, southern PNG, Vanuatu, southern Fiji, Tonga

Temperature Outlook vs Observations



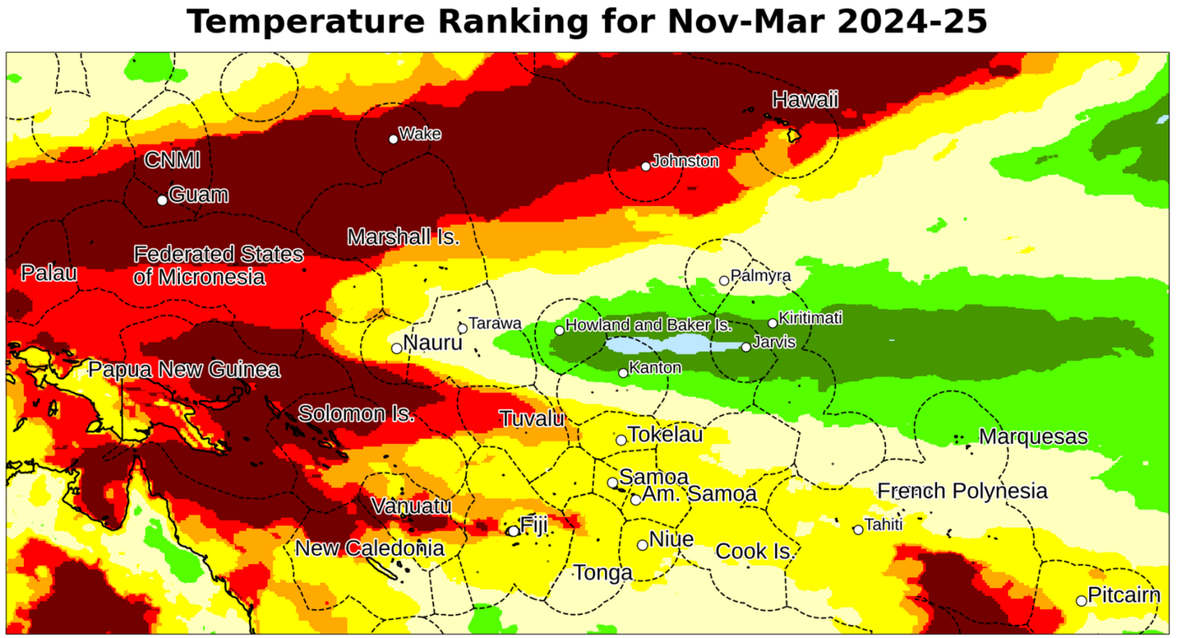


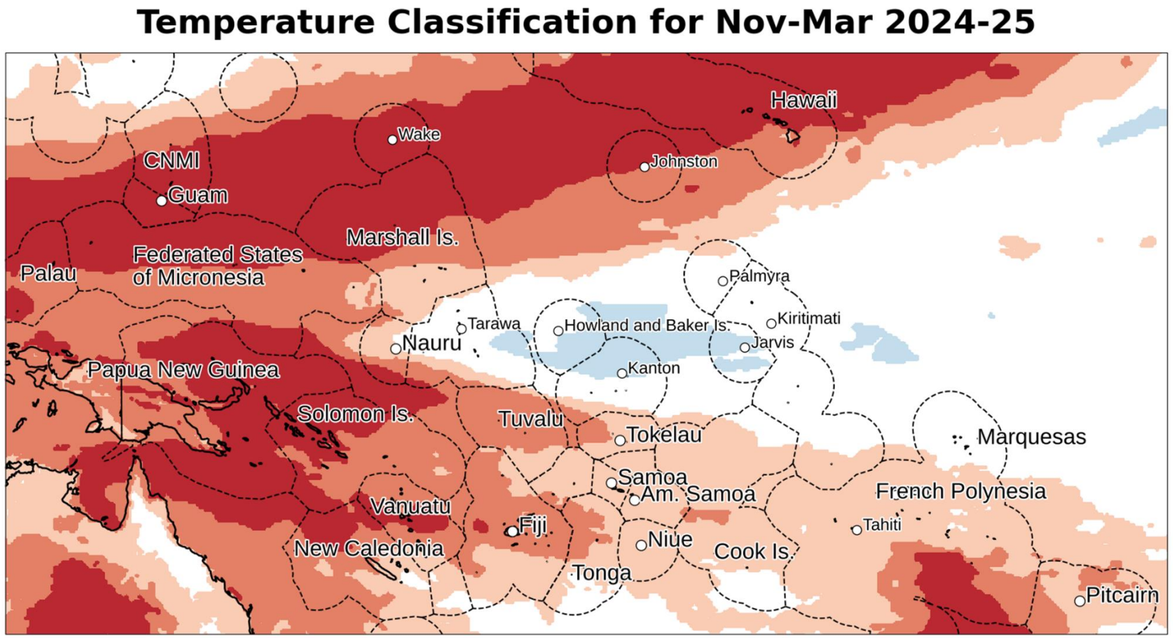
Widespread warmer than normal temperature through out the Pacific

Near normal or cooler than normal temperature along the eastern central Pacific

Temperatures to the north and southwestern Pacific were 0.5°C to 1.5 °C warmer than average for November to January 2025.

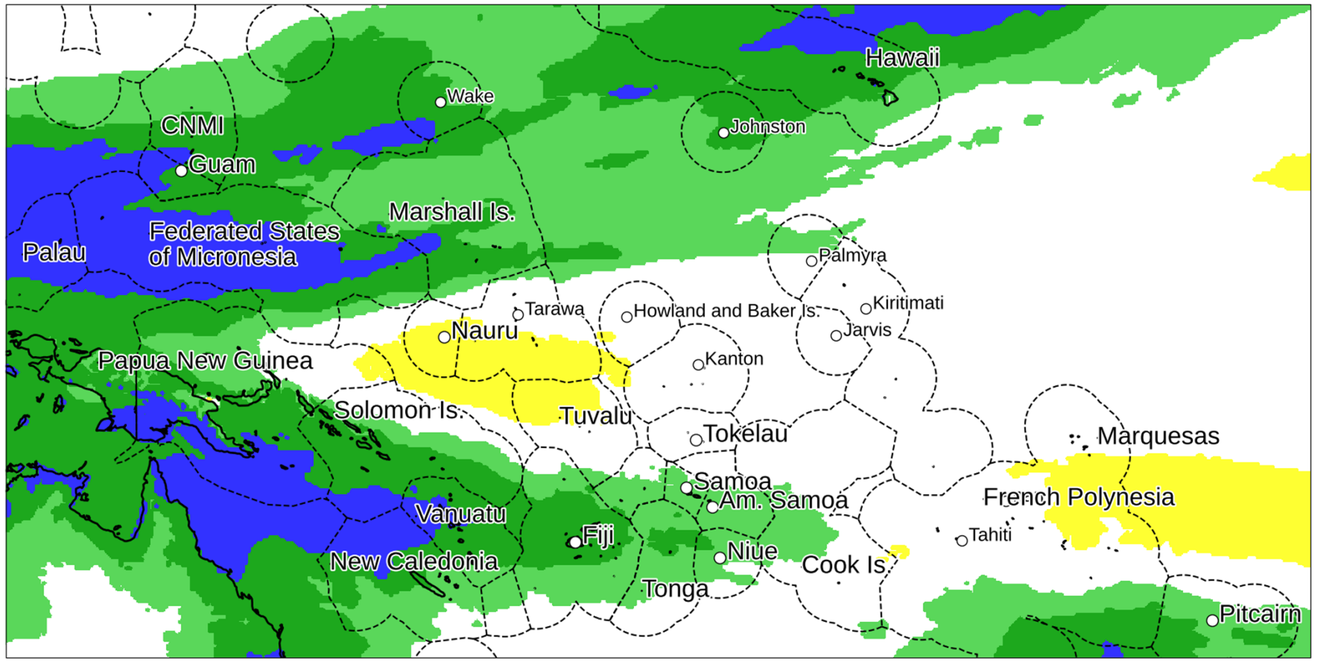
Temperature Observations

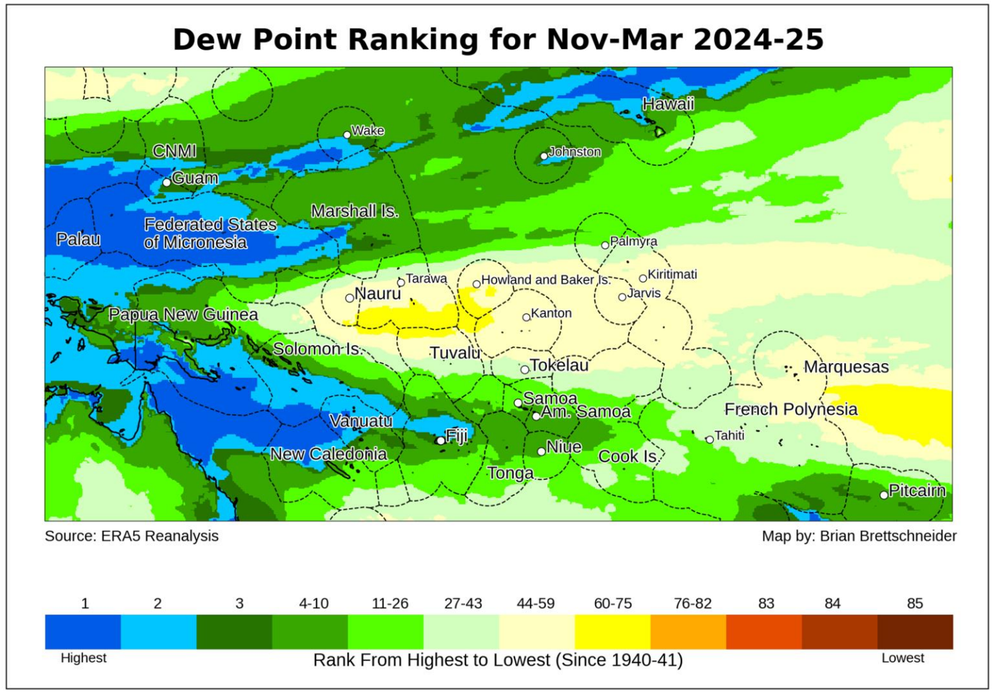


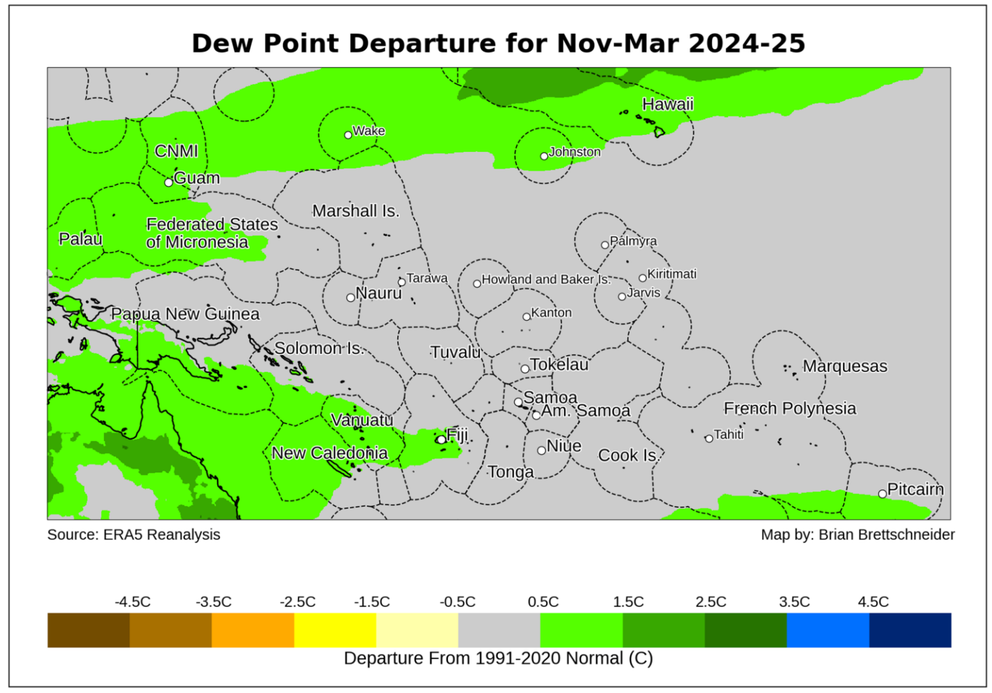


Temperatures in CNMI, Guam, northern Palau, northern FSM, eastern and southern PNG, northern New Caledonia, central Vanuatu, northern Marshall Is., Wake, Northern Johnston, northern Hawaii and southern French Polynesia **were the hottest since 1940 over November 2024 to March 2025.**

Dewpoint Observations

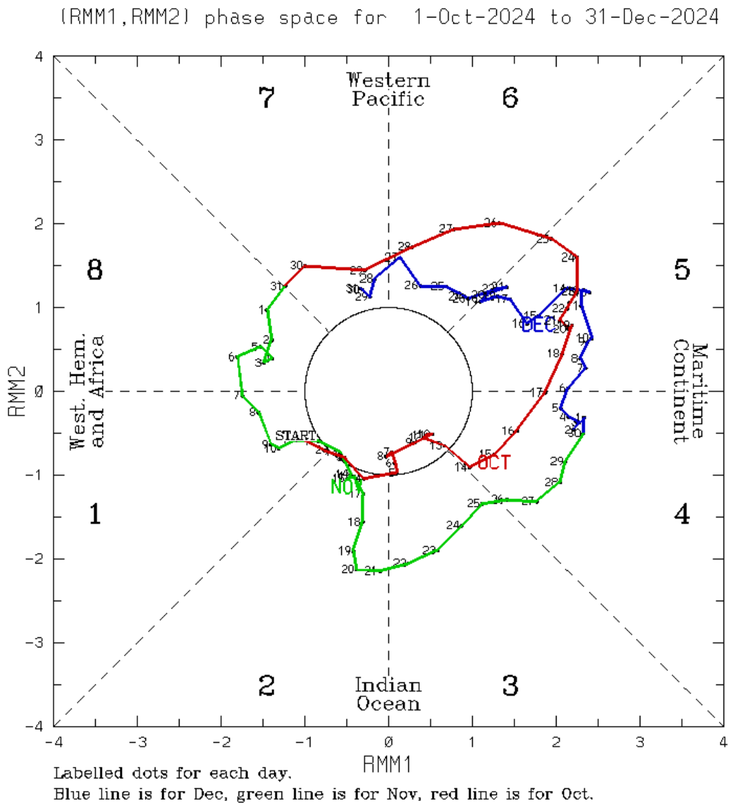


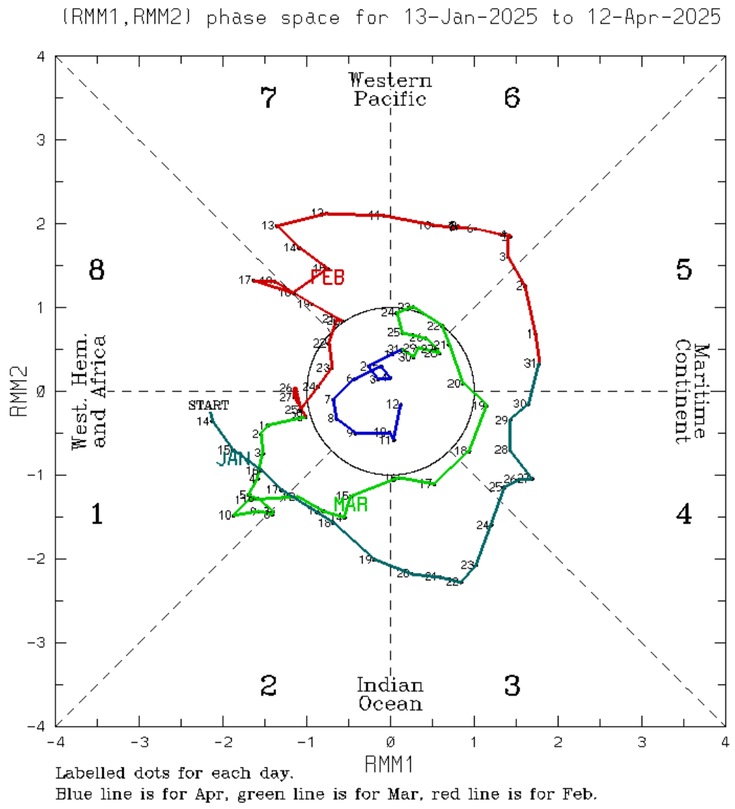




Dew Points in Palau, Federated States of Micronesia, eastern and southern PNG, northern New Caledonia, central Vanuatu **were the highest on records since 1940 over November 2024 to March 2025.**

Madden-Julian Oscillation

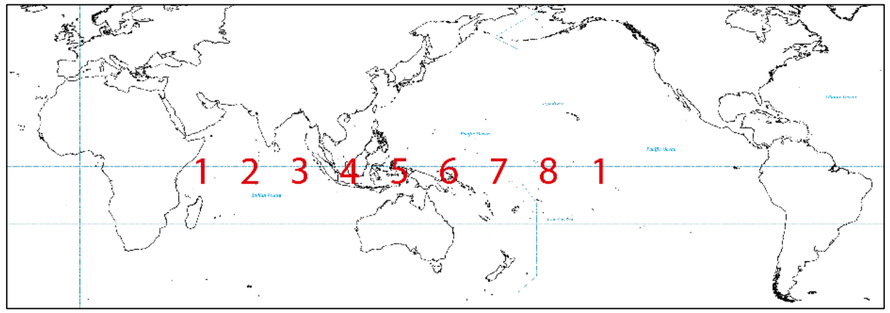




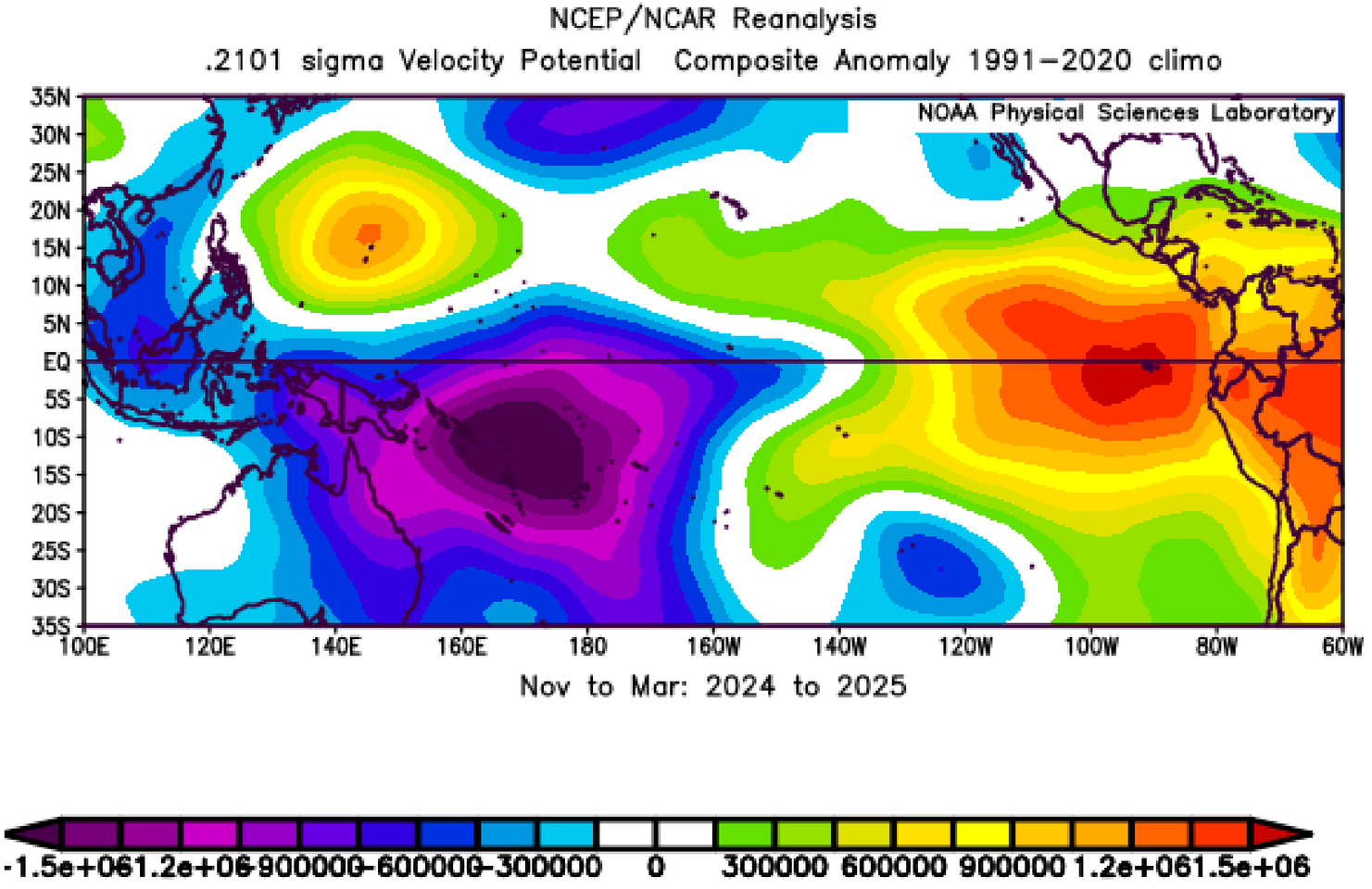
- Strong MJO in the Pacific in October 2024 and February 2025.
- There was a weak MJO event in December 2024.

Phases **6, 7 and 8** are typically associated with **increased rainfall** across the Pacific.

Phases **2, 3 and 4** are typically associated with **decreased rainfall** across the Pacific.



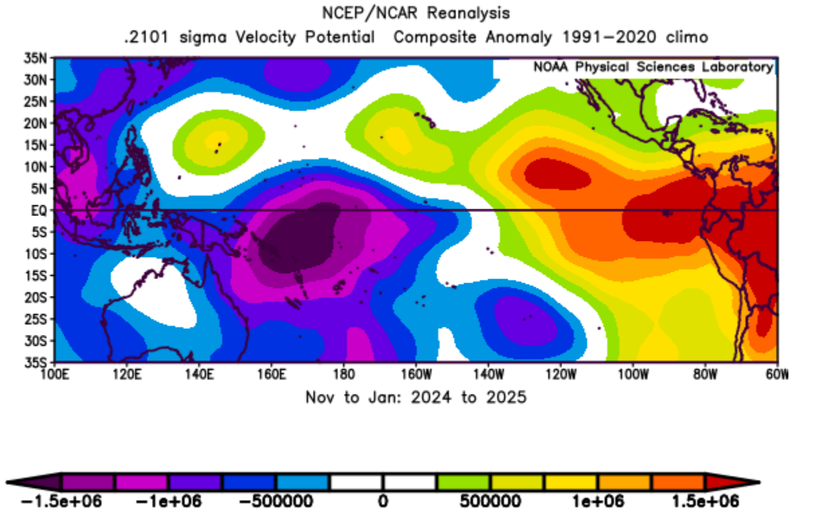
Velocity Potential Anomaly



Convergent (lows)

Divergent (highs)

- Negative anomaly was located in the south- western pacific.
- Positive anomaly in the Northern western and eastern Pacific.
- **Centre of intensity (deep purple) was located over southern Solomon Is. , northern Vanuatu and Fiji.**



Key Points

- Atmospheric forecast from PICOF-15 were relatively good.
- Temperatures to the north and southwestern Pacific were 0.5°C to 1.5 °C warmer than average for November to January 2025.
- Records for dew point and temperature were were the highest on records since 1940 over November 2024 to March 2025.
- There has been persistent dry conditions around the equatorial Pacific and enhance wet conditions around south-western Pacific.
- There was a strong MJO in the Pacific in October 2024 and February 2025 and a weak event in December 2024.

THANK YOU!

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