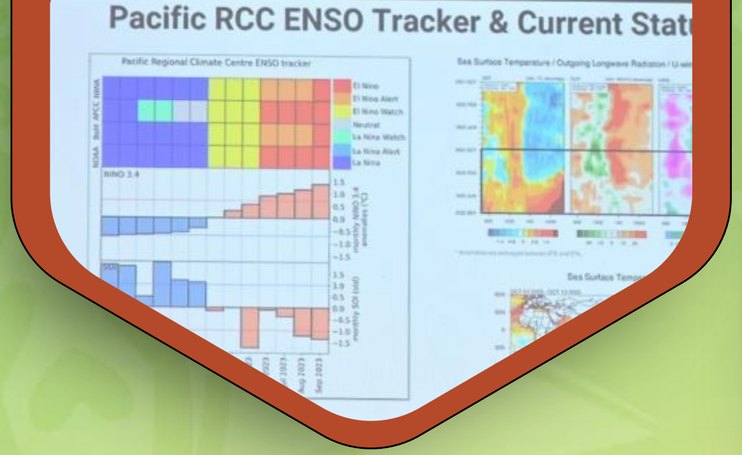

17th SESSION
PACIFIC ISLANDS CLIMATE OUTLOOK FORUM
(PICOF-17)

22 - 23 October, 2025

Port Vila, Vanuatu

WMO

PACIFIC REGIONAL CLIMATE CENTRE NETWORK

Session 2.1

Looking back (May-Oct) - Atmosphere

Philip MALSALE
Climatologist, SPREP

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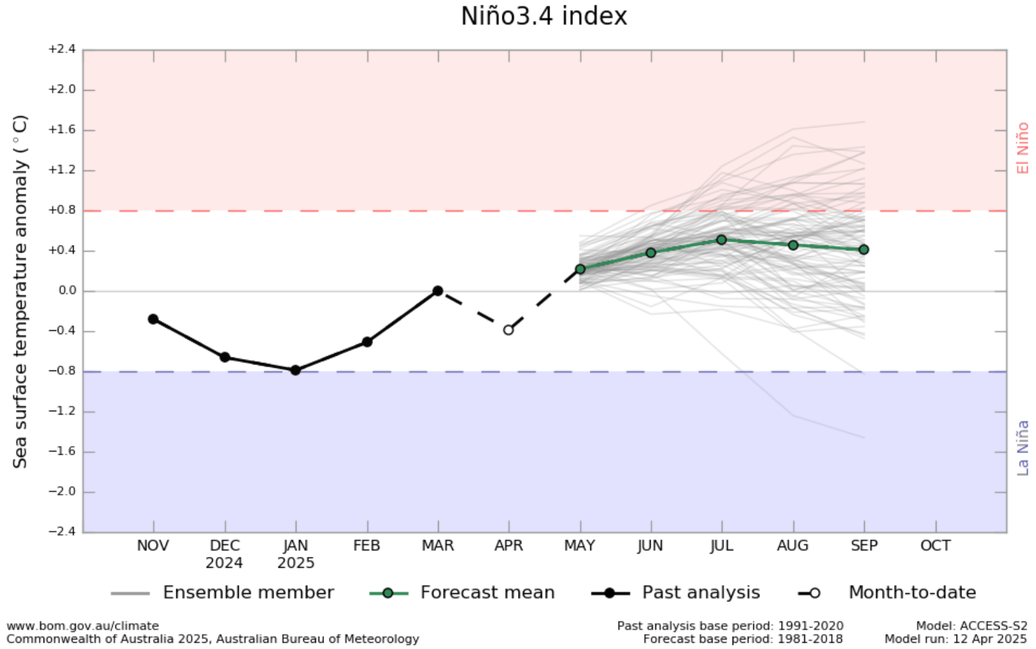
Presentation Outline

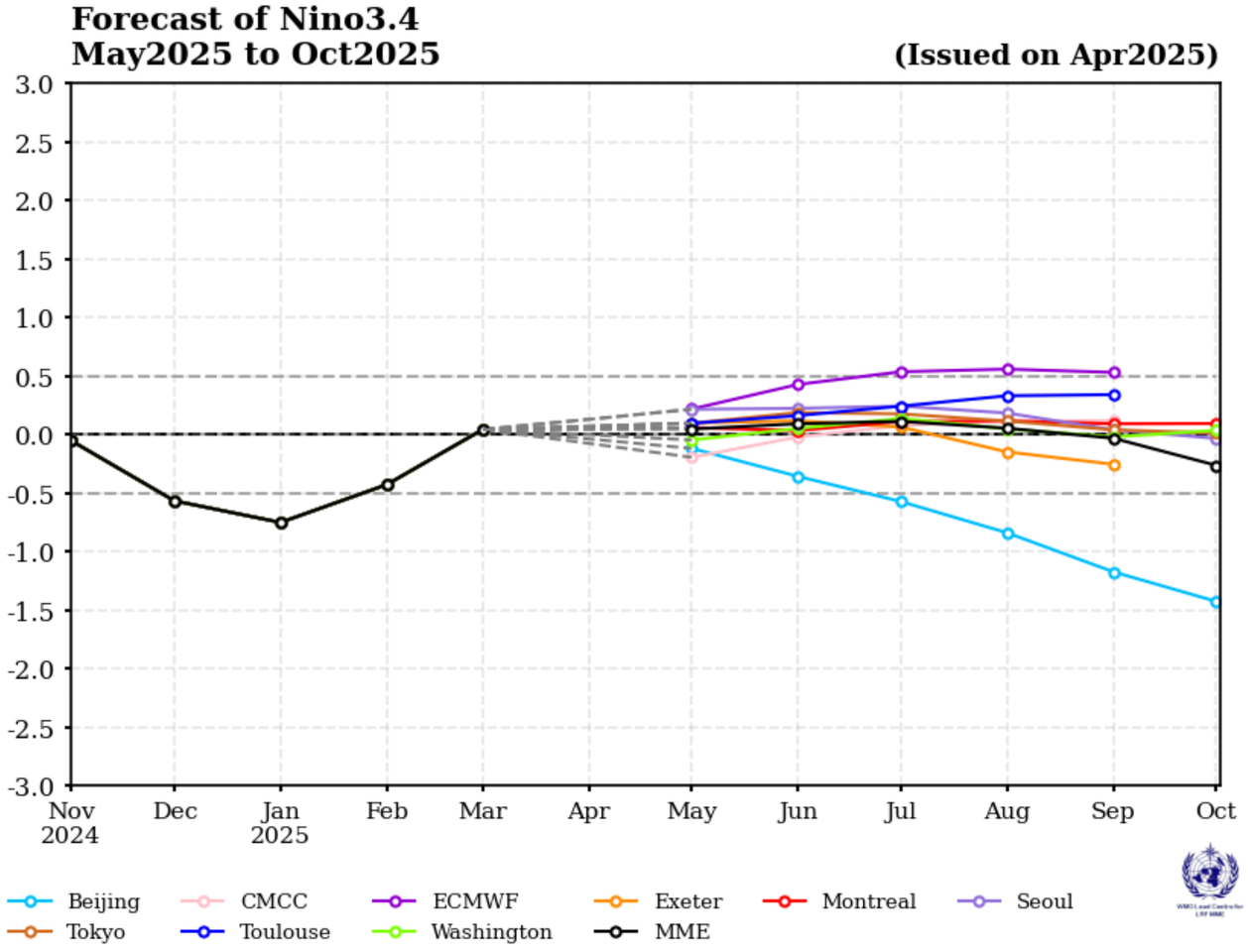
- Review of PICOF-16 outlook
- Air pressure & wind flow patterns
- South Pacific Convergence Zone
- Rainfall and temperature forecasts vs observations
- Velocity potential / Madden-Julian Oscillation

Caption of image/diagram

Source:

PICOF 16 Outlook -ENSO





- ENSO: “El Niño is expected to continue through at least March 2024, peaking in December 2023 or January 2024, likely as a strong event.
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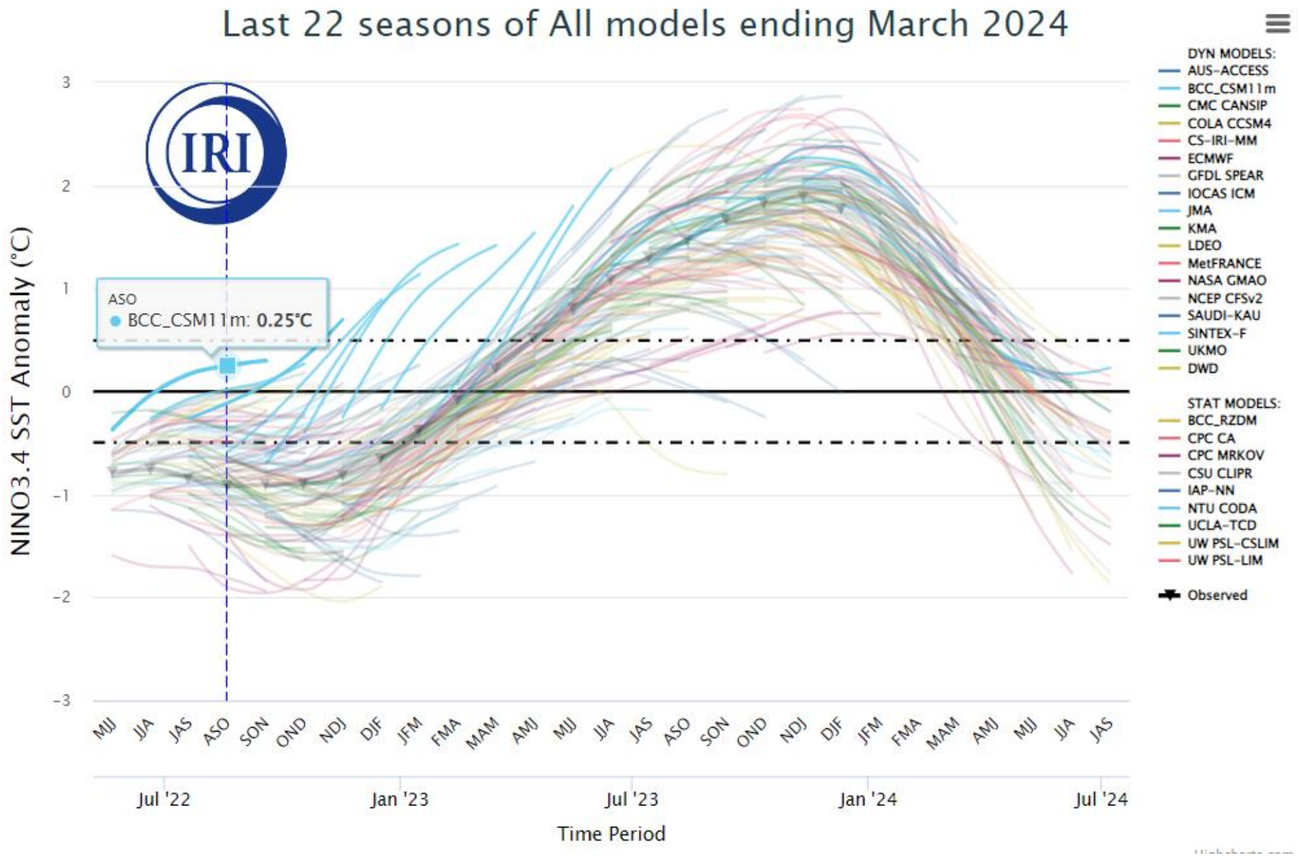
ENSO Observation



- ENSO: “El Niño is expected to continue through at least March 2024, peaking in December 2023 or January 2024, likely as a strong event.

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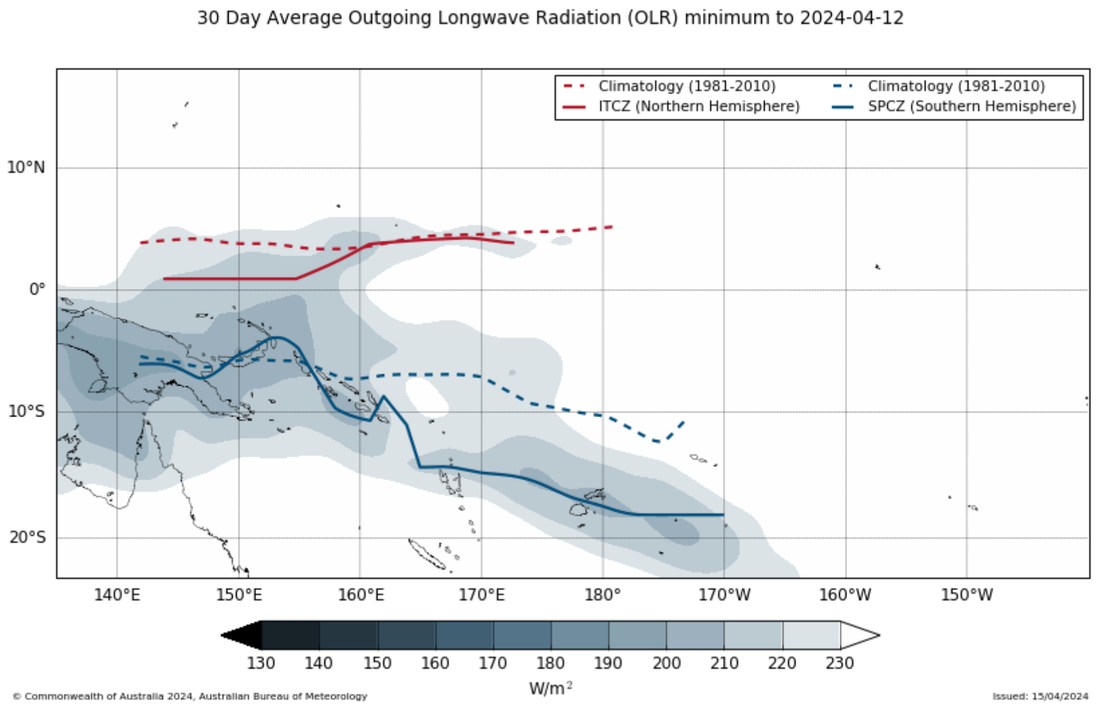
PICOF 16 Outlook -Rainfall



SPCZ currently is displaced southwest its climatological position

- During El Niño, a north-east displacement of the SPCZ may occur (contracting equatorward)

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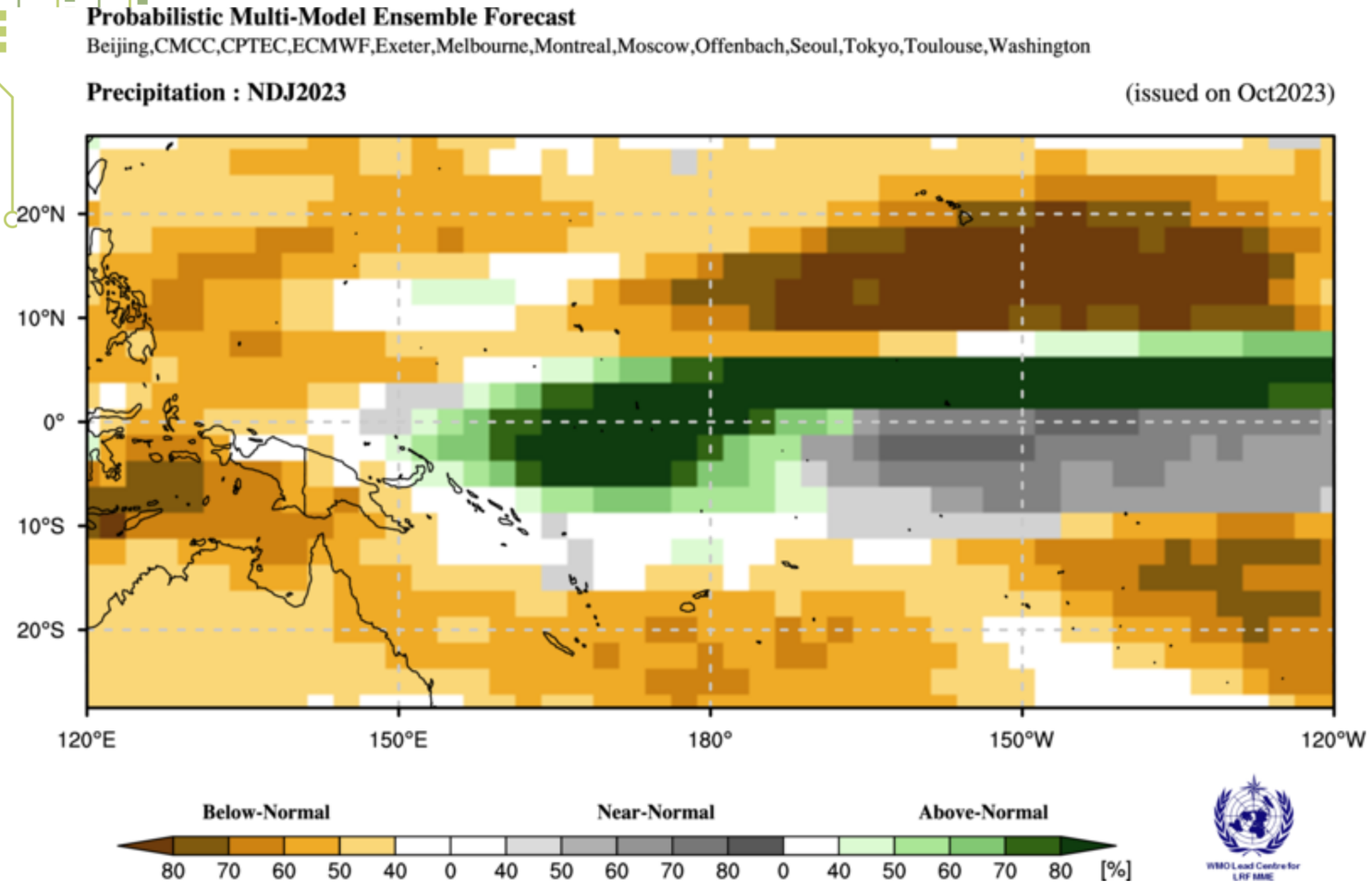
PICOF 13 Outlook -Rainfall



- Below normal rainfall is favoured for much of the off-equatorial North and South Pacific, between southern PNG and southern French Polynesia, and between Palau and the northern Marshall Islands.
- Above normal rainfall is indicated along the equator, extending from eastern Papua New Guinea to the Line Islands of Kiribati, including Nauru, Tokelau, and Tuvalu.

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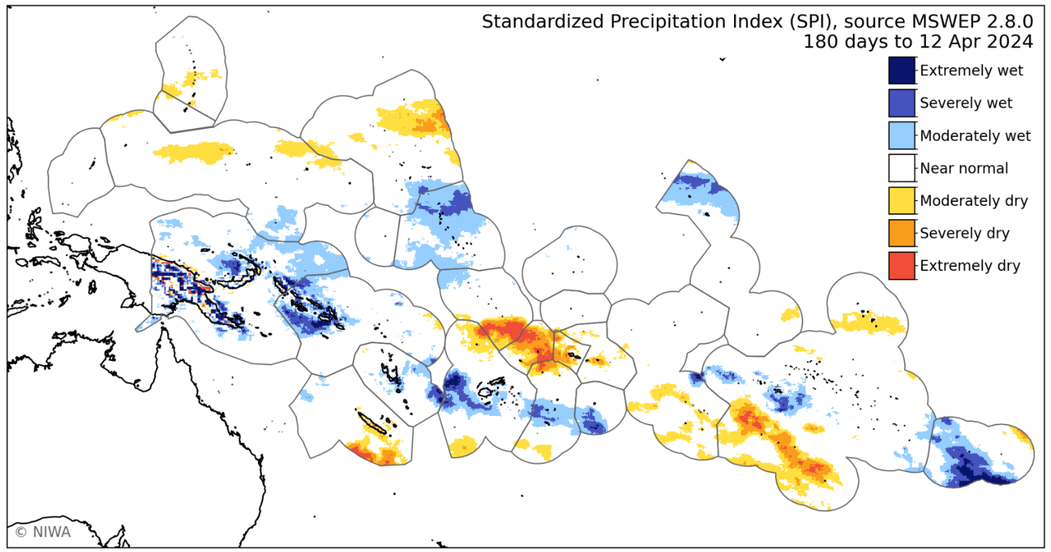
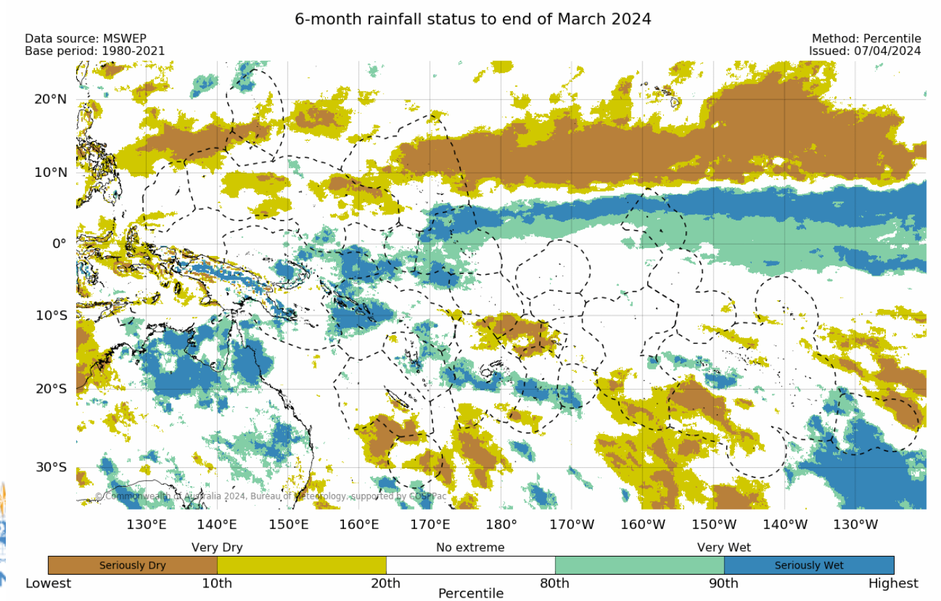
Rainfall Observation – 6 months

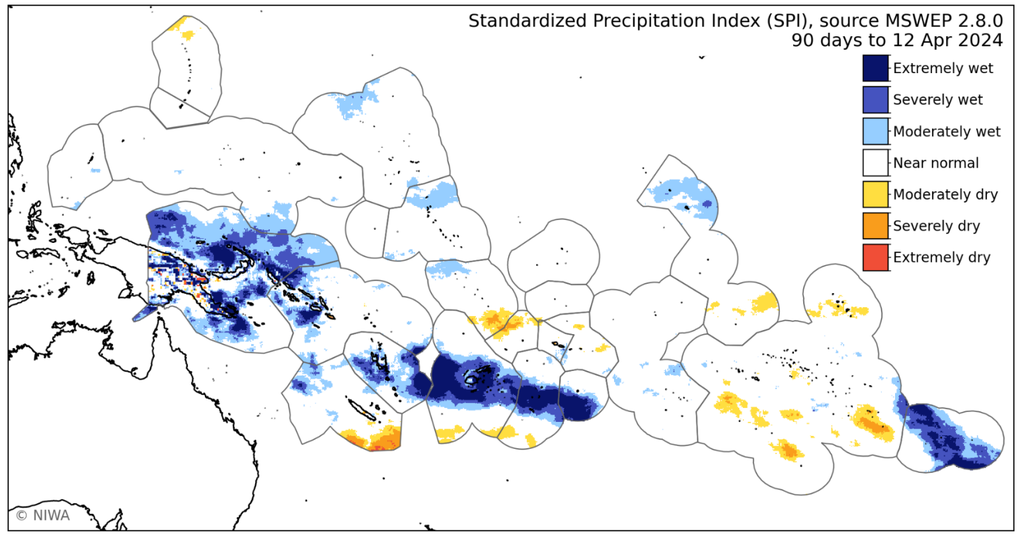


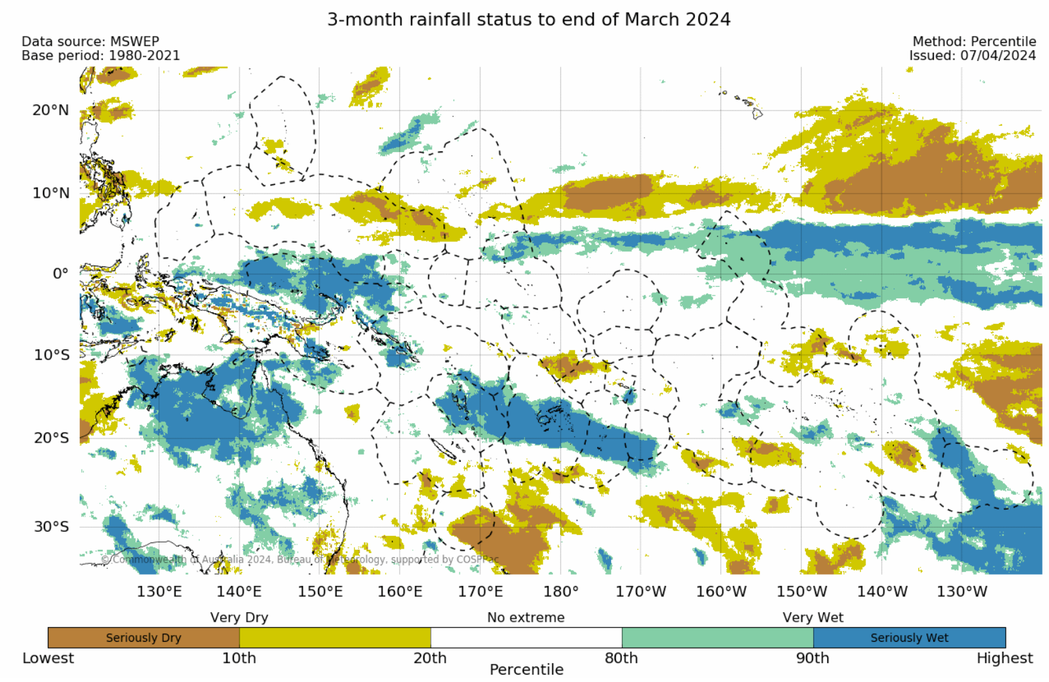


- **Above normal rainfall:** PNG, Solomon Islands, central Vanuatu, central Fiji Islands, Nauru, Kiribati (Gilbert and northern Line Islands) , central Tonga, southern Niue, central French Polynesia and Pitcairn Islands.

Below normal rainfall: CNMI, FSM, RMI, southern Tuvalu, Wallis and Futuna, Samoa, southern Cook Islands, southern and northern French Polynesia

Rainfall Observation -3 months

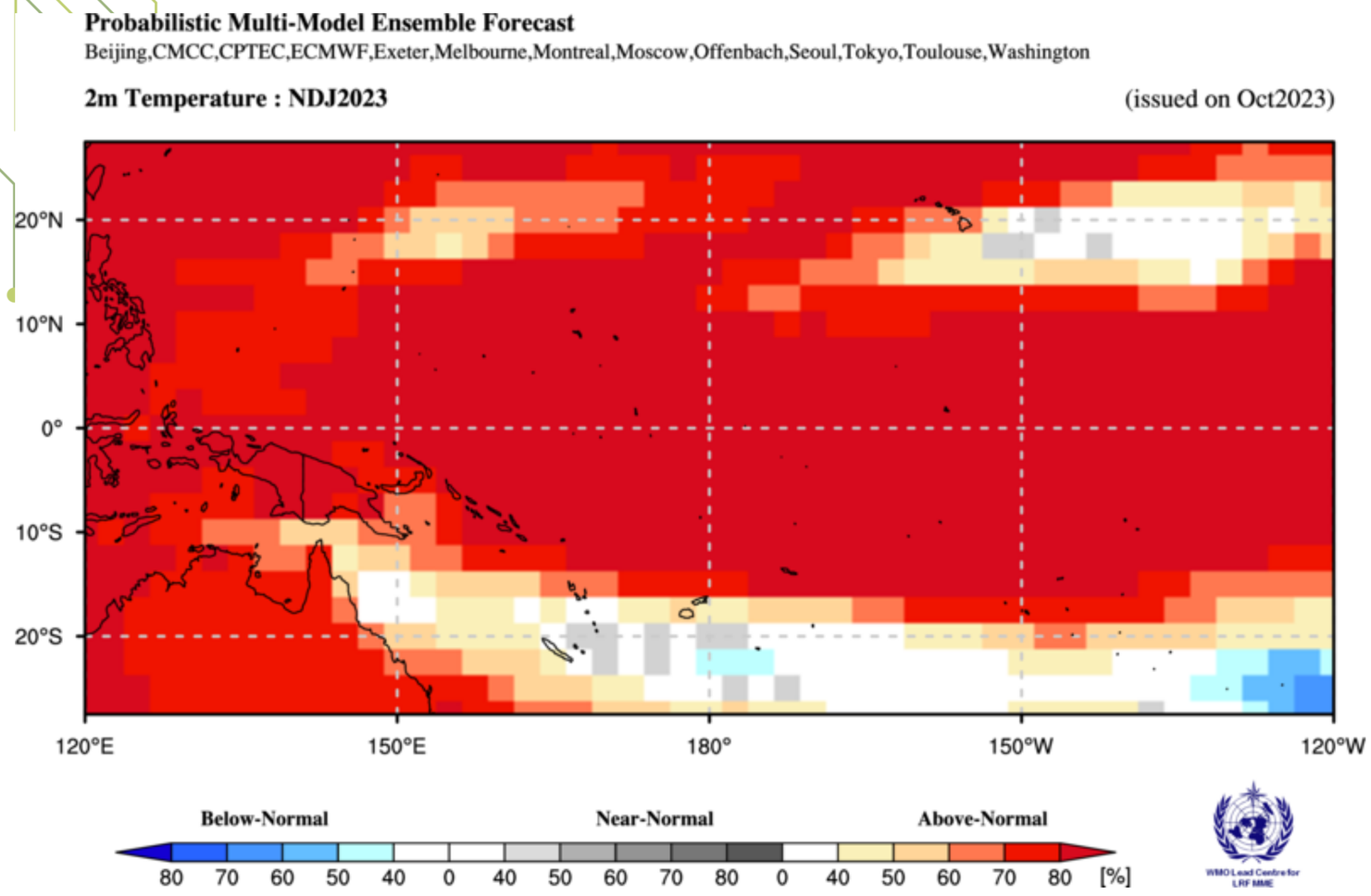




- **Above normal rainfall**: PNG (northern mainland, Islands, far eastern EEZ) , Vanuatu, central Fiji, central Tonga, southern Niue, Kiribati (northern Gilbert, and northern Line Islands), patches of central French Polynesia, plus the Pitcairn Islands.

Below normal rainfall: Southern New Caledonia, central FSM, southern Tuvalu, northern Wallis and Futuna, Samoa,, southern and northern French Polynesia.

PICOF 16 Outlook -Temperature



- **Temperature outlook:**
  "Consistent with an El Niño event, above normal air temperatures are favoured for most countries except the northmost islands around the northern Marianas and near New Caledonia, southern Vanuatu, eastern Fiji, Tonga, Niue, and south-east French Polynesia.

- The air temperature outlook for February-April 2024 is similar to November 2023-January 2024, but the odds for above normal temperatures increase between New Caledonia and Fiji.

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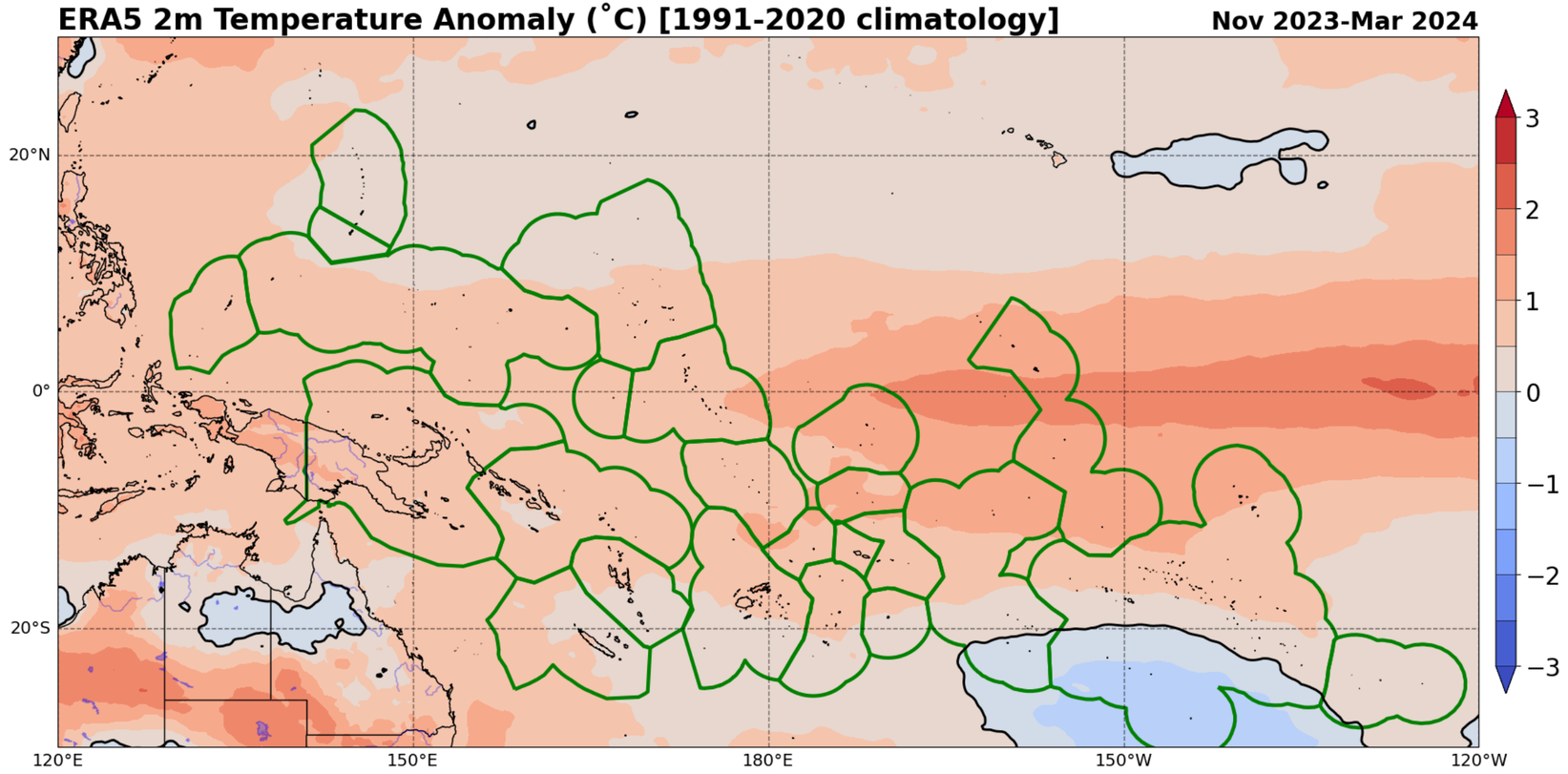
Temperature Observation



- **ERA5 air temperature anomalies:** most countries experienced above normal temperatures in the last six months, aside from the southern Cooks and Austral Islands.

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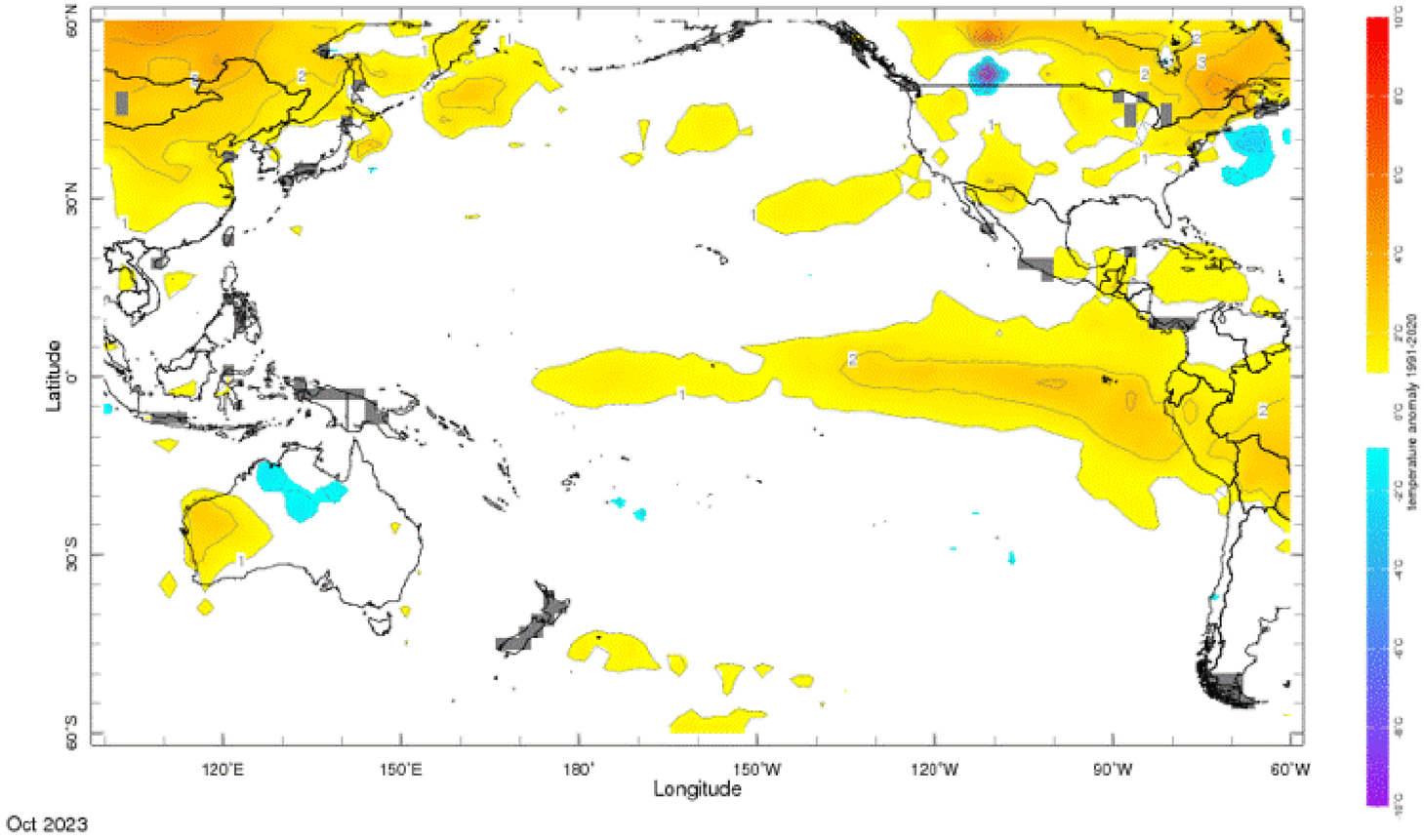
Wind



Oct 2023

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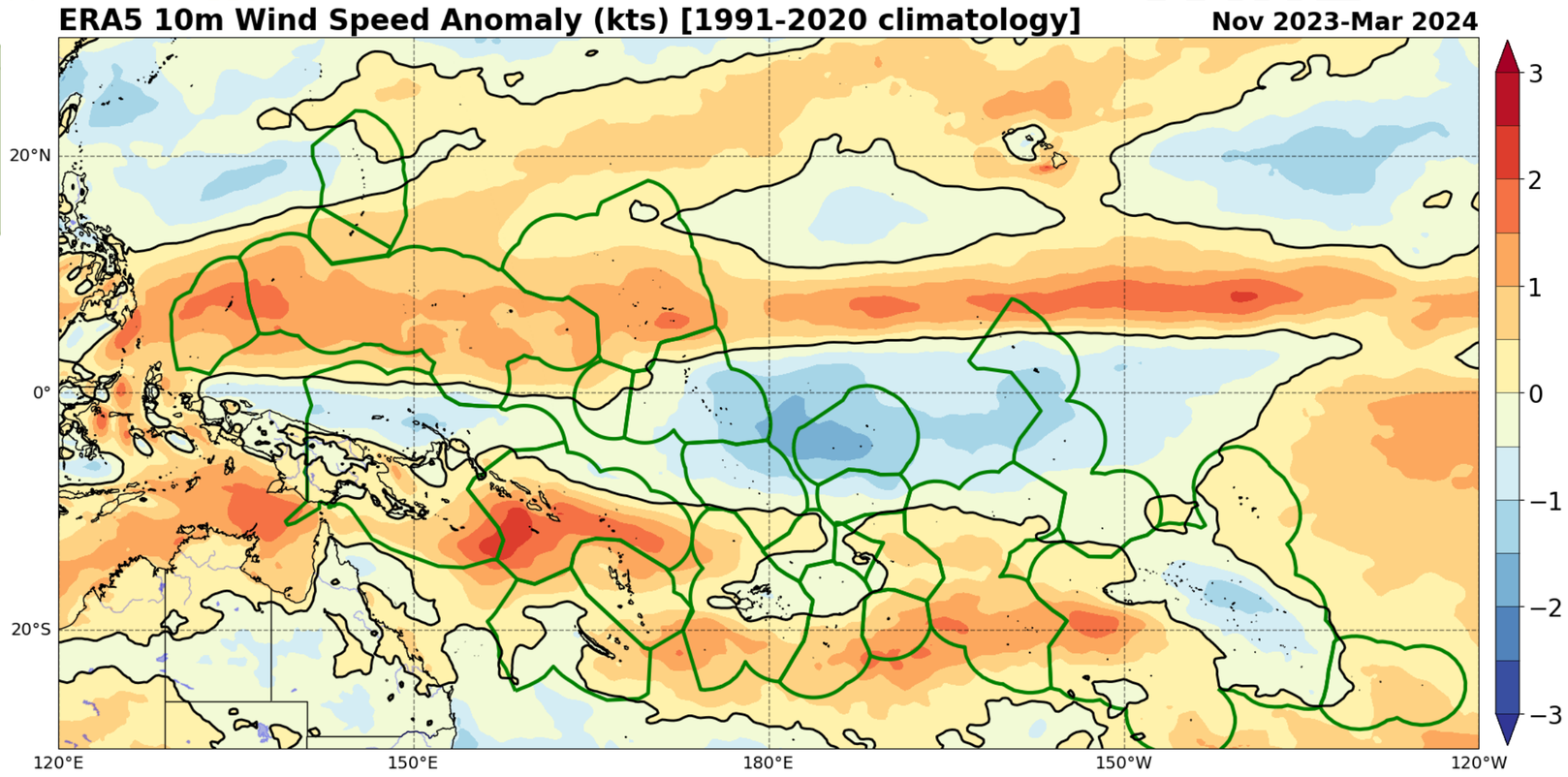
Wind



Forecast: Wind outlooks indicate a higher frequency of southerly quarter air flows over the South Pacific, which may occasionally bring cooler air temperatures to countries located closer to the sub-tropics.

ERA5 wind speed anomalies: many countries experienced above normal wind speeds in the last six months, particularly in the northwest Pacific, the Solomon Islands, southern Tonga, Niue, and the southern Cooks. In Nauru and Kiribati, wind speeds were below normal.

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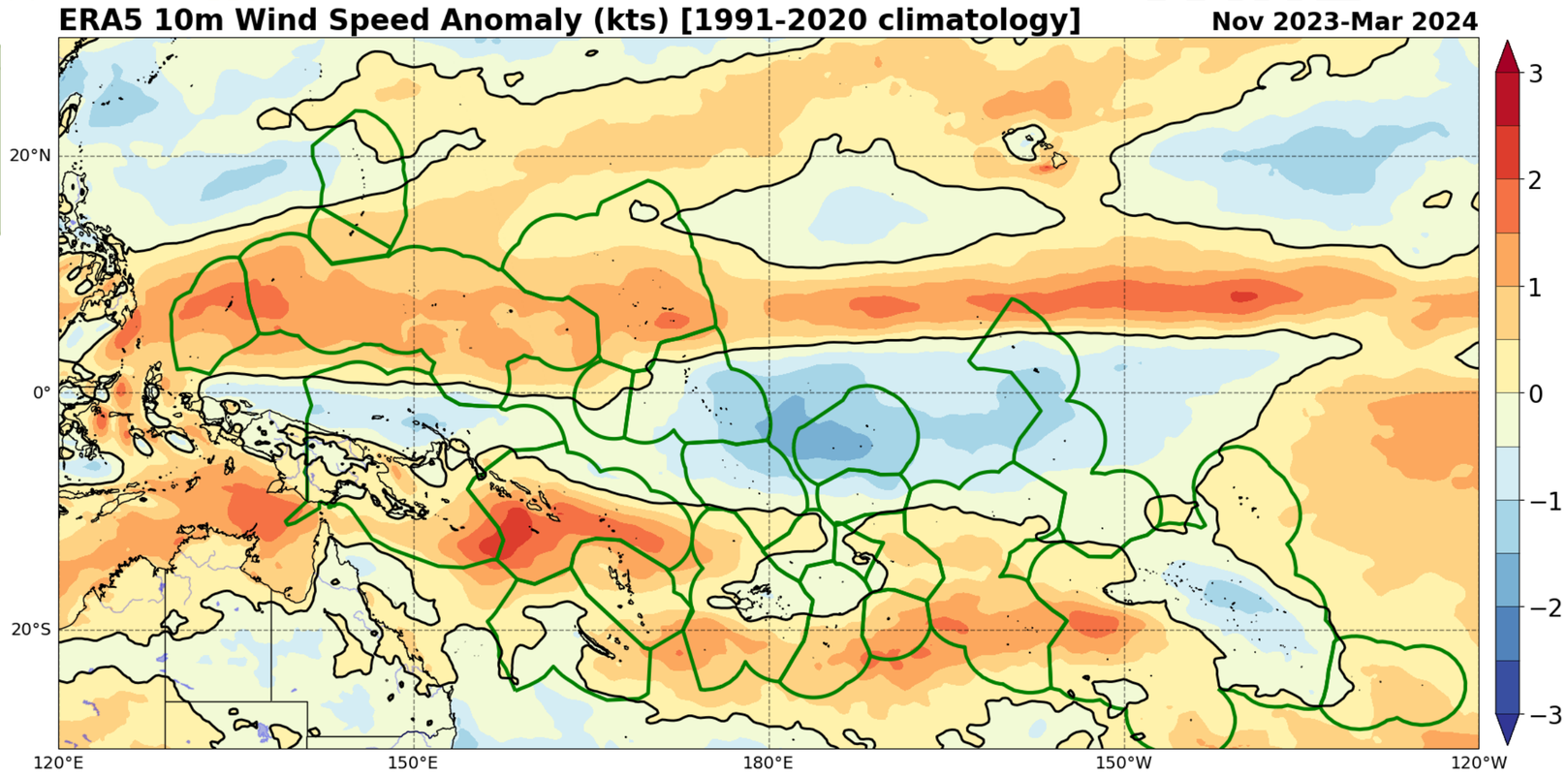
Wind



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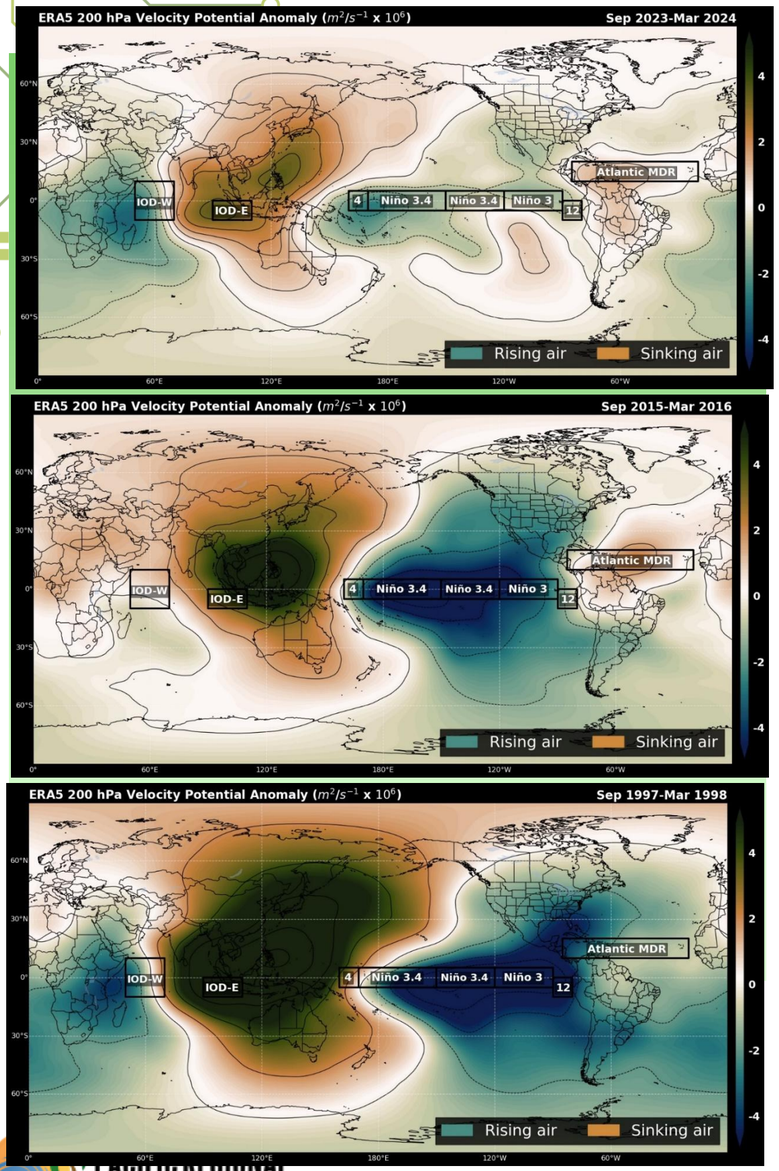
Velocity Potential



2023-24 had more rising motion (green colours) over the western Pacific (La Niña-like) whereas 2015-16 and 1997-98 had more rising motion over the central and eastern Pacific (El Niño-like). This was probably linked to remnant warm water in the western Pacific following a triple-dip La Niña and marine heatwave conditions in the Coral Sea and off-equatorial South Pacific.

This meant that the atmospheric effects of the 2023-24 El Niño differed, in some cases significantly, from what would typically be expected of an El Niño of this magnitude.

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Summary

1. El Nino event peaks in December 2023 and January 2024

2. **Above normal rainfall:** PNG, Solomon Islands, central Vanuatu, central Fiji Islands, Nauru, Kiribati (Gilbert and northern Line Islands) , central Tonga, southern Niue, central French Polynesia and Pitcairn Islands.

3. **Below normal rainfall:** CNMI, FSM, RMI, southern Tuvalu, Wallis and Futuna, Samoa, southern Cook Islands, southern and northern French Polynesia

4. Most countries experienced above normal temperatures in the last six months, aside from the southern Cooks and Austral Islands.

5. Many countries experienced above normal wind speeds in the last six months, particularly in the northwest Pacific, the Solomon Islands, southern Tonga, Niue, and the southern Cooks. In Nauru and Kiribati, wind speeds were below normal.

6. The velocity potential map show 2023-24 had more rising motion than 1997/2015, This meant that the atmospheric effects of the 2023-24 El Niño differed

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THANK YOU!

philipm@sprep.org

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Caption of image/diagram

Source:

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