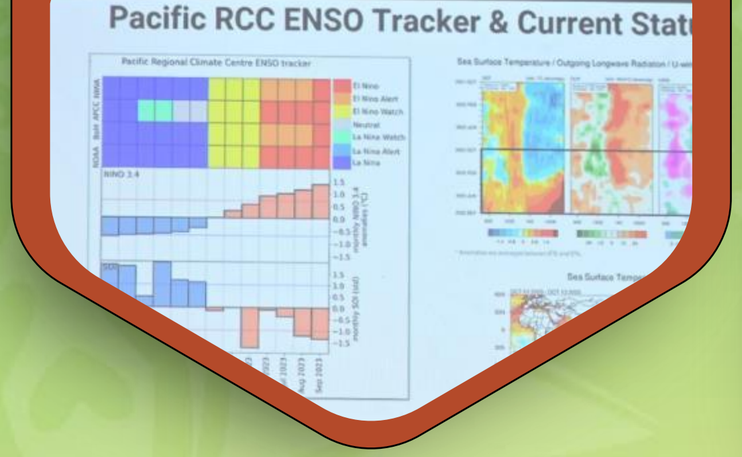

17th SESSION
PACIFIC ISLANDS CLIMATE OUTLOOK FORUM
(PICOF-17)

22 - 23 October, 2025

Port Vila, Vanuatu

Tropical Cyclone Outlook

November – April 2025-26

Dr. Hannah Marley (Climate Applications Scientist)
Dr. Nicolas Fauchereau (Principal Scientist, Climate & Analytics)

Earth Sciences New Zealand

OFFICIAL

Background and methods

The TCO is led by **Dr. Andrew Lorrey**, principal scientist, ESNZ

provides an **bird-eye view** of how the TC season (November 2025 – April 2026) might develop

Informed by different models, but based on the knowledge that statistics of TC genesis are strongly influenced by the background climate state, in particular **ENSO**

Impacts can vary dramatically from season to season and can be driven by combination of TC intensity, track, interactions with populated areas and exposure + vulnerability

“Reduced risk” means risk in a *statistical* sense ...

The TC outlook is a product that encapsulates the best available science, in the context of a changing climate, affecting background climate conditions and long-term trends in TCs in the region.

It’s an **outlook**, not a forecast, and it’s impossible to predict individual TCs months in advance

TCO: Southwest Pacific Tropical Cyclone Outlook -October 2025 | Earth Sciences New Zealand | NIWA

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Background and methods

The **consensus** Tropical Cyclone Outlook (TCO) for the Southwest Pacific is developed by combining results from three primary methodological approaches:

- **Analogue Model**

- **International Dynamical Climate Models**

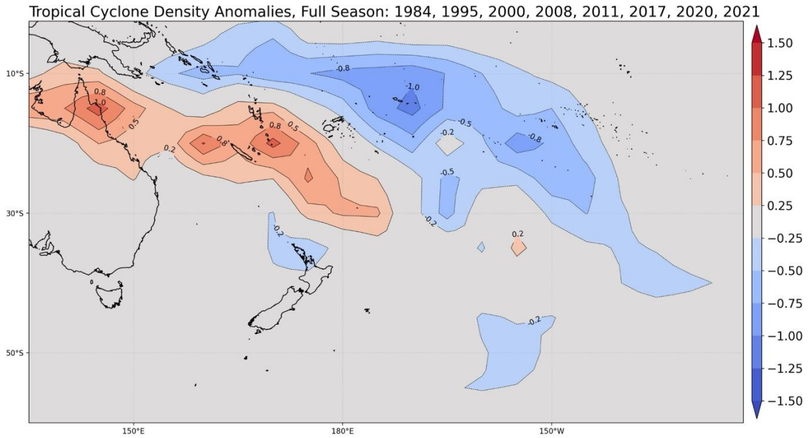
- Deterministic **Statistical** Model (**TCO-SP**), developed by the University of Newcastle.

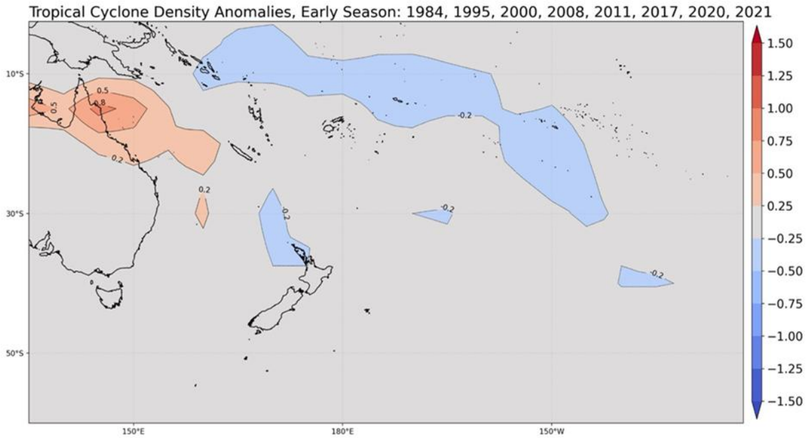
Details of the methods and applications for the 2025-2026 Southwest Pacific TC season can be found in:

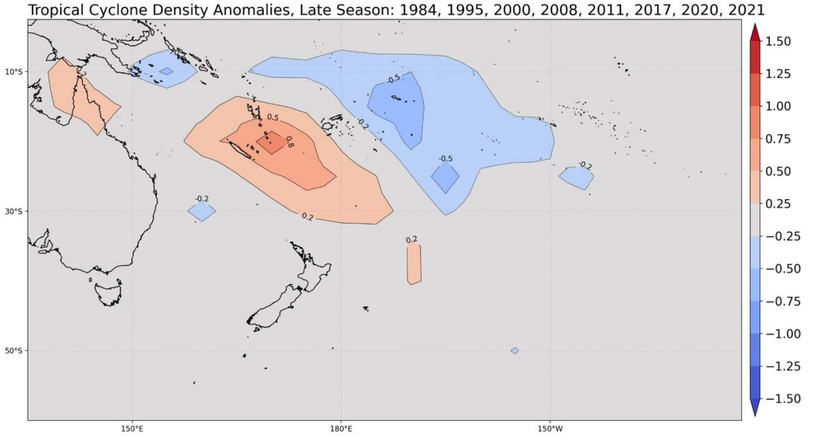
Southwest Pacific Tropical Cyclone Outlook -October 2025 | Earth Sciences New Zealand | NIWA

and listed references therein

Analog method, TC density anomalies







Analog seasons selection based on:

- **Recent evolution**
  - **ENSO neutral conditions** late autumn through early austral winter (May–June)
  - Transition to a **borderline La Niña state** by mid-to-late winter (July–August)

- **Forecast ENSO conditions**
  - **Weak-to-moderate La Niña conditions emerging** by October–December 2025 and persisting through early 2026
  - **Weakening of La Niña conditions** during the late season (February–April 2026)

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Dynamical models

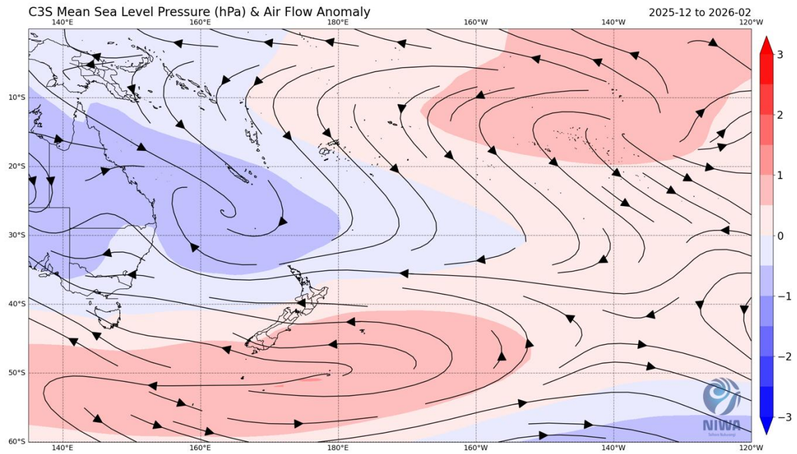
Multi-model ensemble (MME) guidance is in good agreement with the expectation of a **weak-to-moderate La Niña event** emerging and persisting for at least the first half of the upcoming TC season

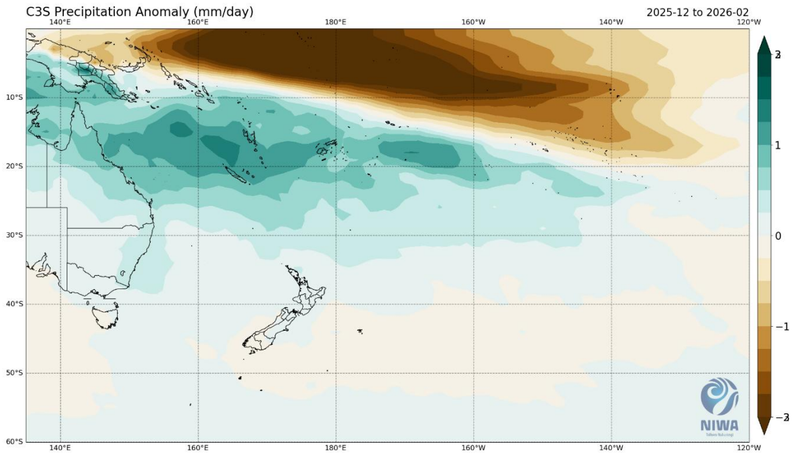
Mean sea level pressure (MSLP) is forecast to be below normal for much of the **western and southwest sections** of the basin, including the Coral Sea

MSLP is forecast to be **above normal east of the Date Line** and north of 20◦S

South Pacific Convergence Zone (SPCZ) will be **displaced southwest of normal**

The dynamical guidance indicates **regional variability**, suggesting **western areas of the basin are likely to be more active than eastern parts**





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TCO-SP

Table 4: Expected TC counts including expected range (95% confidence intervals (CI)) for the 2025/26 Southwest Pacific tropical cyclone season (September 2025 update), difference from long term average TC count (1991-2020).

		Long-term average TC count (1991-2020[b])	Expected TC Count (Probable TC count range: 95% CI)	Difference between expected and long-term average (TC)
	Southwest Pacific	8.7	5.8 (4.4 – 7.6)	▼-2.9
Island Scale Models	Fiji	2.5	2.1 (1.5 – 3.1)	▼-0.4
	Solomon Islands	2.5	2.1 (1.4 – 3.1)	▼-0.4
	New Caledonia	2.3	2.2 (1.4 – 3.5)	▼-0.1
	Vanuatu	2.0	1.9 (1.3 – 2.8)	▼-0.1
	Tonga	2.0	0.8 (0.4 – 1.7)	▼-1.2
	Papua New Guinea	1.6	0.8 (0.4 – 1.3)	▼ -0.8
	Northern New Zealand	0.7	0.9 (0.3 – 2.0)	▲+0.2
Subregional models[a]	**N SWP** (Tuvalu, Wallis & Futuna, Tokelau)	1.8	0.7 (0.3 – 1.4)	▼-1.1
	C SWP (Samoa, American Samoa, Niue)	1.5	0.7 (0.4 – 1.5)	▼-0.8
	SE SWP (Southern Cook Islands, Society Islands, Austral Islands)	1.6	0.7 (0.3 – 1.4)	▼-0.9
	NE SWP (Northern Cook Islands, E Kiribati: Line Islands, Marquesas, Tuamotu Archipelago, Gambier Islands, Pitcairn Islands)	1.1	0.5 (0.2 – 1.4)	▼-0.6

[a] Sub-regional models – where individual island TC climatology shows less than 1.5 TCs per season, geographically neighbouring EEZs have been merged to increase sample size (Click here for more information).
[b] Average TC counts calculated for November-April TC season.

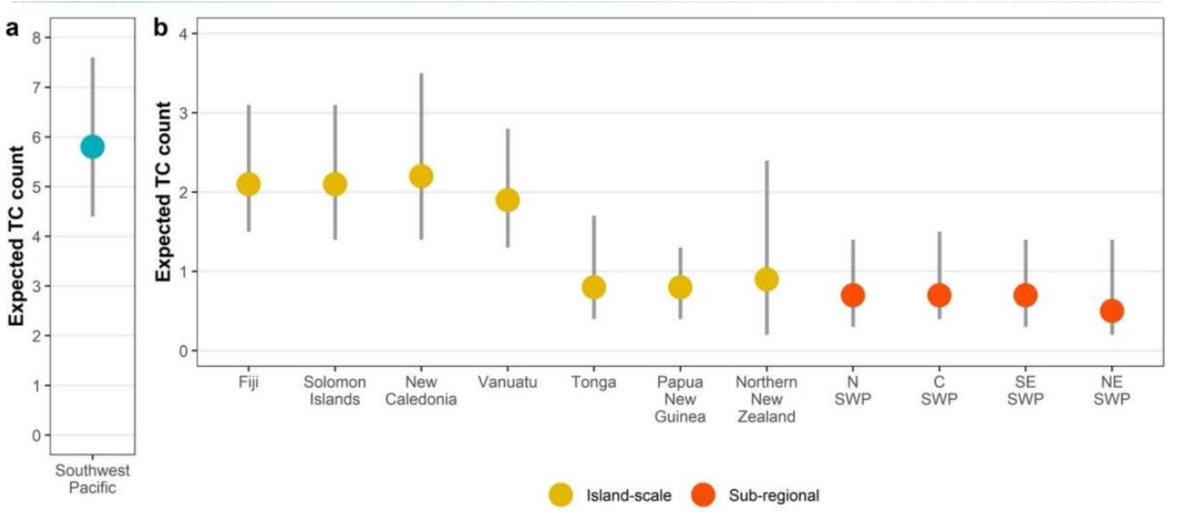

Figure 8: Expected TC count including probable range (95% confidence intervals) for the 2025/26 Southwest Pacific Tropical Cyclone Season based on TCO-SP (Magee et al., 2020). Expected TC counts are summarised for the Southwest Pacific (panel a) and island-scale and sub-regional locations (panel b).

The TCO-SP outlook suggests that **six named TCs may form** in the Southwest Pacific basin, with a probable range of 4–8
N**ear below normal activity** for the basin when compared to the 1991–2020 average of 8.7 TCs

This range of expected TC activity **agrees with the analogue guidance**

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Consensus

TC activity 2025/26	ESNZ Analogue	International Dynamical		TCO-SP Deterministic	ICU Consensus	Outlook Confidence
SP Basin	Reduced	Normal-Reduced	*	Reduced	Normal-Reduced	Moderate-high
Solomon Is.	Normal-Reduced	Normal	1	Normal	Normal-Reduced	Moderate-high
Papua New Guinea	Normal	Normal		Normal-Reduced	Normal-Reduced	Moderate
N. New Zealand	Normal	Normal-Elevated		Normal-Elevated	Normal-Elevated	Moderate-high
Vanuatu	Elevated	Normal		Normal	Normal-Elevated	Moderate
New Caledonia	Elevated	Normal		Normal	Normal-Elevated	Moderate
Tonga	Normal-Reduced	Normal		Reduced	Normal-Reduced	Moderate
Fiji	Normal	Normal-Elevated		Normal	Normal	Moderate-high
Wallis & Futuna	Normal-Reduced	Normal	2	Reduced	Normal-Reduced	Moderate-high
Tokelau	Reduced	Normal		Reduced	Normal-Reduced	Moderate-high
Tuvalu	Normal-Reduced	Normal		Reduced	Normal-Reduced	Moderate-high
Niue	Reduced	Reduced	3	Normal-Reduced	Reduced	High
Samoa	Reduced	Reduced		Normal-Reduced	Reduced	High
American Samoa	Reduced	Reduced		Normal-Reduced	Reduced	High
Austral Is.	Reduced	Reduced	4	Normal-Reduced	Reduced	Moderate-high
Society Is.	Reduced	Reduced		Normal-Reduced	Reduced	Moderate-high
S. Cooks	Reduced	Reduced		Normal-Reduced	Reduced	Moderate-high
N. Cooks	Unlikely	Unlikely	5	Reduced	Unlikely	Moderate-high
Tuamotu	Unlikely	Unlikely		Reduced	Unlikely	Moderate-high
W. Kiribati	Unlikely	Unlikely		Reduced	Unlikely	Moderate-high
Marquesas	Unlikely	Unlikely		Reduced	Unlikely	Moderate-high
Pitcairn	Unlikely	Unlikely		Reduced	Unlikely	Moderate-high
C. Kiribati	Unlikely	Unlikely		Reduced	Unlikely	Moderate-high
E. Kiribati	Unlikely	Unlikely		Reduced	Unlikely	Moderate-high

***TCO-SP model area of focus:**

1. Island scale model
2. Northern SW Pacific region
3. Central SW Pacific region
4. Southeast SW Pacific region
5. Northeast SW Pacific region

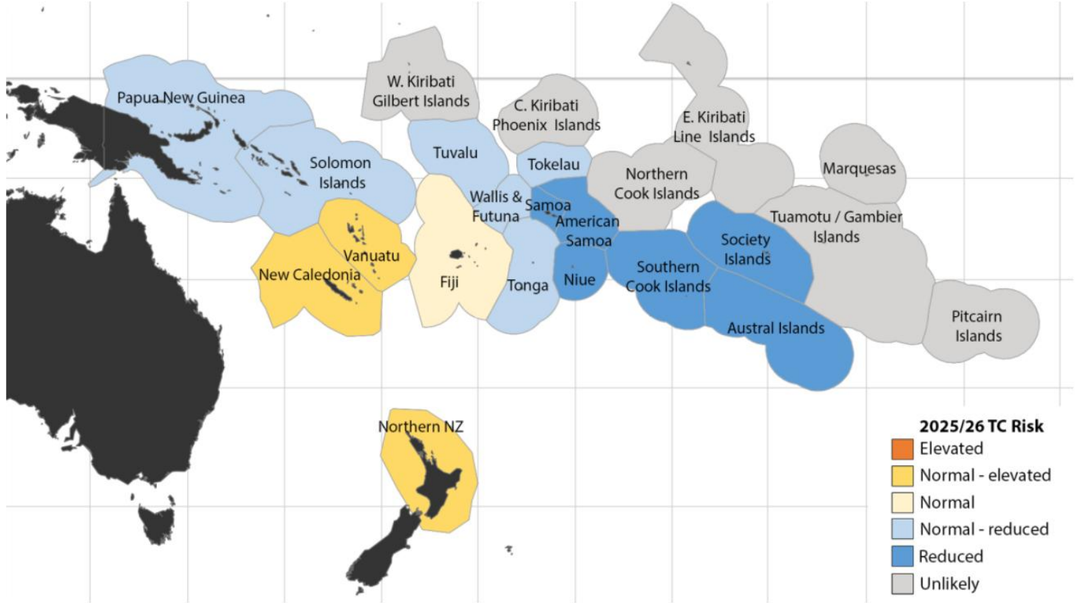
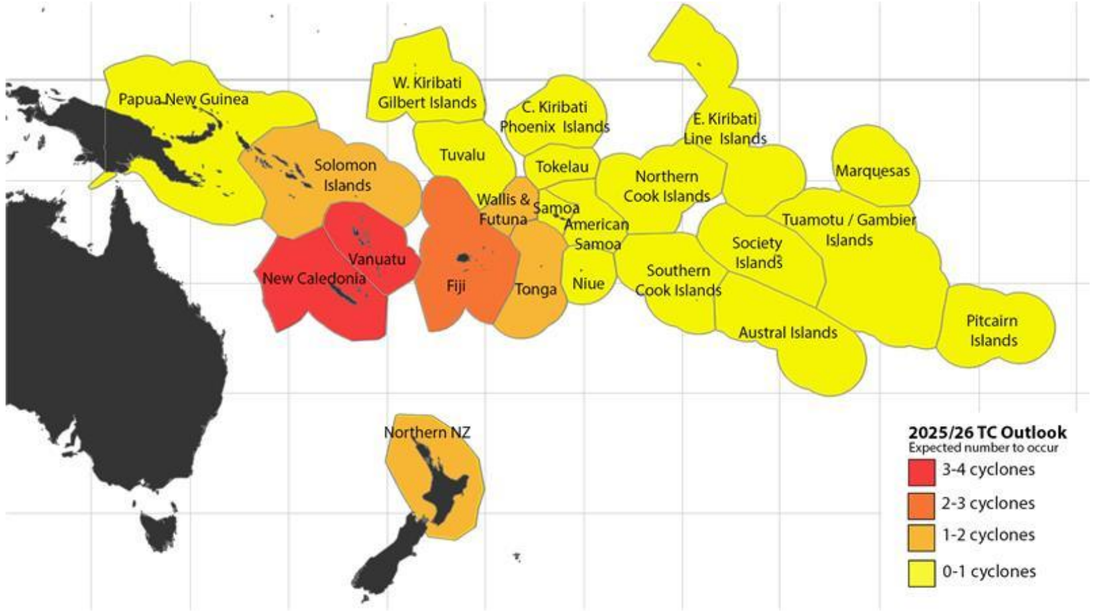


Figure 1: Tropical cyclone risk for the 2025-26 season



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Summary

Our assessment of TC activity for the coming season indicates **normal to below normal** activity.

Five to nine named TCs could occur in the Southwest Pacific from November 2025-April 2026. The long-term average number of named TCs per season between 1991-2020 is around nine.

For the coming season, **significant differences are expected between the western and eastern halves of the basin.**

The risk of impact from a TC is expected to be higher near the Coral Sea, and around New Caledonia and Vanuatu

Normal to reduced risk is anticipated for the central part of the basin, and reduced risk is expected for the eastern part of the basin.

Analogue years suggest multiple TCs could intensify to at least category 3 strength.

Since quality observations began in the early 1970s, there has been a trend toward fewer but stronger TCs.

Despite the official season running from November through April, TCs sometimes occur out-of-season.

It does not take a direct hit or severe TC to cause considerable damage or life-threatening weather. When dangerous weather is forecast, **please heed the advice of your local meteorological service, civil defence, or disaster management office.**

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THANK YOU!

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