2025-26 SOUTHWEST PACIFIC TROPICAL CYCLONE OUTLOOK

Earth Sciences New Zealand (ESNZ) coordinated this tropical cyclone outlook, which was contributed to by the Meteorological Service of New Zealand (MetService), the University of Newcastle and meteorological services across the Pacific Islands

Pacific Islands | New Zealand | El Niño-Southern Oscillation | Consensus outlook | Background

Tropical cyclone outlook summary for the Southwest Pacific Islands

- Our assessment of tropical cyclone[1] (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.
- TCs have a significant impact across the Southwest Pacific, with the season starting in November and lasting through April. 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, as illustrated in Figure 1. 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.

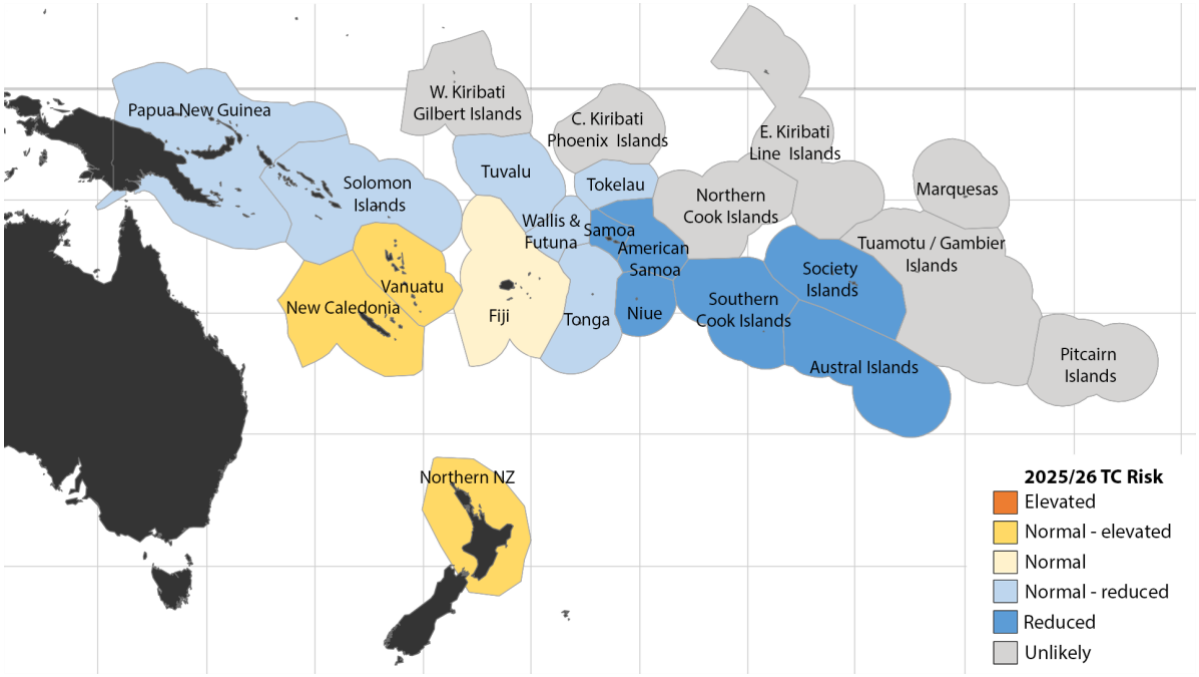

Figure 1: Tropical cyclone risk for the 2025-26 season

- Vanuatu and New Caledonia typically experience the greatest TC activity with an average of two or three TCs passing nearby each year.
- **Normal or elevated activity**: Vanuatu, New Caledonia and Northern New Zealand.
- **Near normal activity**: Fiji.
- **Normal or reduced activity**: Solomon Islands, Papua New Guinea, Tonga, Tuvalu, Tokelau, and Wallis & Futuna.

[1] Tropical cyclones are categorised in strength from 1 to 5, with 5 being most intense. Tropical cyclones that reach category 3 or higher are classified as severe, with mean (10 minute) wind speeds of at least 119 km/h.

- **Reduced activity:** Samoa, American Samoa, Niue, Society Islands, Southern Cook Islands and Austral Islands.
- **Activity unlikely:** Marquesas, Kiribati, Northern Cook Islands, Tuamotu Archipelago, and Pitcairn Islands.
- Between 2-4 severe TCs reaching category 3 or higher may occur anywhere across the region, so all communities should remain prepared.

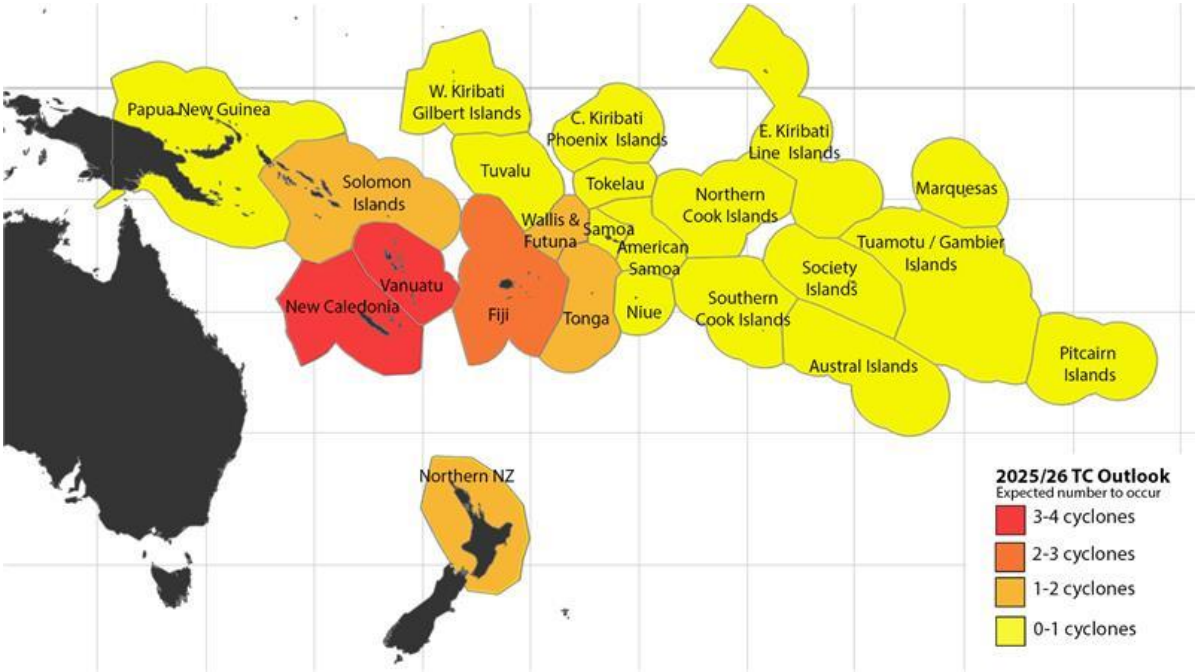

Figure 2: Number of predicted named tropical cyclones interacting with an island group for the 2025-26 season

- Past seasons with similar conditions to the present, called "analogue years", suggest multiple TCs could intensify to at least category 3 strength.
- Category 5 strength TCs[2], in which sustained winds are 200 km/h or greater, are associated with a majority of the analogue years.
- 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.

Tropical cyclone outlook summary for New Zealand

- On average, at least one ex-TC passes within 550 km of New Zealand each year. This season, the risk is considered **normal or elevated,** with expectations that risk of an interaction will increase in late summer and autumn.
- If an ex-TC tracks close to the country, there is a near-equal probability of it tracking to the east or west of the North Island based on historical observations.

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

- Three out of eight analogue years considered in this outlook had at least one ex-TC passing within 550 km of the country.
- Analogue years suggest that a decaying ex-TC entering the New Zealand region could affect maritime and coastal areas around the North Island, and an interaction with the South Island cannot be ruled out.
- Significant rainfall, extreme winds, hazardous marine conditions, and coastal damage are all possible leading up to and during ex-TC events.
- The effects of ex-TCs can also be spread over a large area, particularly if the decaying ex-TC interacts with mid-to-high latitude weather systems.

El Niño-Southern Oscillation outlook

- The El Niño Southern Oscillation (ENSO), comprised of La Niña, neutral, and El Niño phases, plays an important role in year-to-year regional TC development and spatial coverage and is a key factor in this outlook.
- As of early October 2025, sea surface temperatures across the eastern and central equatorial Pacific Ocean are below average and near La Niña thresholds.
- Atmospheric circulation patterns related to ENSO over French Polynesia and northern Australia indicate neutral ENSO conditions as of early October 2025.
- Oceanic and atmospheric forecasts for ENSO suggest weak-to-moderate La Niña conditions have an 85% chance of emerging by October-December 2025. La Niña conditions, should they develop, are likely to persist through early 2026, with deterioration of the event during the back half of the TC season in February-April 2026.
- The progress of ENSO and TC activity will continue to be tracked with an update to this guidance in January 2026.

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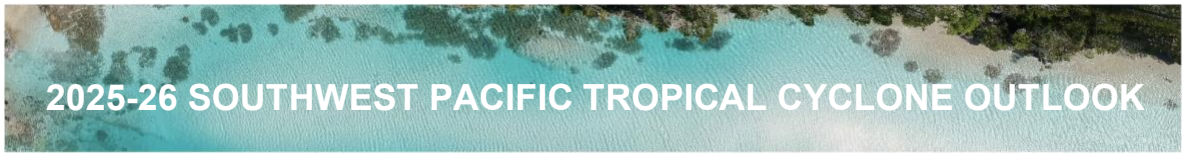
In the Pacific Islands, please contact your local national meteorological service for information about how this guidance should be interpreted. In Australia and the associated offshore islands, please contact the Australian Bureau of Meteorology. In French Polynesia, Wallis & Futuna, and New Caledonia please contact Météo-France.

For the latest issue of the tropical cyclone outlook and a video presentation discussing expected regional tropical cyclone activity, head to https://niwa.co.nz/climate/southwest-pacific-tropical-cyclone-outlook.

**As of 1 July 2025, Crown Research Institutes NIWA and GNS Science were combined to form the Public Research Organisation Earth Sciences New Zealand.*



Island Climate Update consensus outlook

Table 1: Island Climate Update (ICU) consensus outlook for November 2025-April 2026 tropical cyclone activity based on combining analogue model, international dynamical climate model, and TCO-SP deterministic statistical model outlook results. Indications for seasonal TC activity based on these joint methods are stated in the "ICU consensus" column and are also shown in Figure 1. Expected TC numbers are based on the NIWA analogue method (see Table 2) and supported by the TCO-SP deterministic method.

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

Background information – summary of analogue, dynamical, and deterministic guidance for the ICU TC outlook

Analogue, dynamical and deterministic model guidance for the SW Pacific show good agreement for the coming season (Table 1). The ICU consensus column is based on the combined outcomes for the three types of seasonal outlook information. The consensus forms the basis for the full season (November-April) outlook for Southwest Pacific TC activity (and risk) for the 2025/26 season. It should be noted that there are only very minor differences in terms of the TC risk that are ascribed using the consensus method relative to previous years that used the analogue guidance supported by the dynamical guidance. Future work will evaluate (and validate) the outcome of each individual model vs the consensus-based approach.

Modern analogue guidance

TCs in the Southwest Pacific usually develop between November and April, occasionally develop in October and May, and very rarely develop between June-August. An analysis of past TC tracks in the SW Pacific indicate they are exceptionally unlikely in September, although systems in the past have formed during this time. Peak TC activity in the SW Pacific Basin is usually between January to March; however, severe TCs can occur at any time during the season.

Based on past seasons with similar background climate conditions to the present, TC activity in the coming season is expected to be normal to slightly elevated in the region between Vanuatu and New Caledonia and in the north Tasman Sea to the north and northwest of New Zealand during the late season. On average, nearly half of the TCs that developed since the 1969/70 season have reached at least Category 3 cyclones with mean wind speeds of at least 64 knots (119 km/h).

To find past analogues that describe the climate state leading into the upcoming TC season, the conditions for May 2025 through to the beginning of October 2025 were examined for the tropical Pacific. Similar situations from 1969 to the present were then identified from the historical record. For late autumn through early austral winter (May-June) ENSO neutral conditions prevailed for the central-western equatorial Pacific Ocean. By mid-to-late winter (July-August) conditions for the Pacific had moved to a borderline La Niña state. During that time, southwest Pacific regional climate patterns showed broader signs of La Niña forming, despite some weaker equatorial Pacific Ocean sea surface temperature anomalies during September. There is no evidence of the building ENSO event turning into El Niño at the start of the coming TC season.

ESNZ's monitoring of sea surface temperature anomalies in the Niño 3.4 region (central-western equatorial Pacific Ocean) shows the relative Niño3.4 index (RONI) was near zero as of late September, but with cooler than normal temperatures as a whole in preceding months. This reflects the central equatorial Pacific being cooler than the average of the global tropics and within the range of La Niña on seasonal time scales. The subsurface equatorial Pacific was 1°C to 3°C cooler than average between 50m and 100m depth in the

eastern part of the basin. The West Pacific Warm Pool continued to recharge and was 0.5°C to 1.5°C warmer than average at the end of September.

The available information from international forecasting centres that issue global climate outlooks and ENSO diagnostics support this outlook, and they are integrated by ESNZ. The collective guidance suggests La Niña is building and will most likely emerge early in the TC season during 2025, with a 85% chance the event will develop during the October-December period. However, atmospheric indicators across the tropics continue to be reflective of an ENSO neutral state. Forecasts also indicate deterioration of La Niña to neutral conditions is likely during the late season (February-April). As such, an additional element used to hone the historic analogues for the upcoming TC season included years when ENSO conditions during November-April were reminiscent of either a well-coupled La Niña or an ocean-dominated La Niña in the early season, and ocean-dominant La Niña or neutral conditions in the early late season.

To help identify past ENSO conditions for the selection of analogue seasons, we used an ENSO index that combines the Southern Oscillation Index (SOI) with the most widely used oceanic index of sea surface temperature anomalies in the equatorial central-western Pacific (NINO3.4). This joint ENSO index is described in Gergis and Fowler (2005) as the "Coupled ENSO Index" (CEI) but employing a five-month average for NINO3.4 and a three-month average for the SOI when computing this ENSO index. This year, we included calculation of the CEI using both the traditional Nino3.4 index (TONI) and the relative Nino3.4 index (RONI) to give two slightly different views of the past climate system (CEI-TONI, CEI-RONI). Additional analogues using historical velocity potential patterns for the Pacific Basin that appeared similar to the present climate state were also brought to bear for evaluating the coming TC season. Inevitably, all three views produced similar results for areas of increased and decreased TC activity as well as the overall TC counts.

We selected eight analogue TC seasons for the 2025/26 outlook, drawing on the approaches above, highlighting seasons when the equatorial SSTs and the SOI were indicative of neutral conditions by mid-winter and early spring, and either ocean-dominant La Niña or well-coupled La Niña conditions at the start official TC season start in November. We also tempered our selection of analogues with knowledge that there will be a continuation of La Niña into summer but deterioration of the event in autumn.

The eight selected analogue TC seasons (1984/85; 1995/96; 2000/01; 2008/09; 2011/12; 2017/18; 2020/21; 2021/22) that typified the antecedent ENSO conditions during austral early spring. Note that the selection of analogue seasons in this step of the outlook relates to the high-quality TC data period in the satellite era beginning in 1969/70 (55 seasons, for which TC track data are current only to the end of the 2023/24 season), and the limited number of similar analogues to this season (including rejected analogues, which may include some past seasons with similar antecedent conditions but not similar to what is forecast for ENSO). These selected analogues also encapsulate, for the most part, a lead into the season with neutral conditions transitioning to moderate La Niña conditions during the full, early and late season. These analogues closely align with the expected ENSO outlook.

Earth Sciences New Zealand's SW Pacific TC outlook spans four areas of responsibility overseen by international monitoring and forecast agencies (RSMC Nadi, TCWC Melbourne, TCWC Port Moresby, and TCWC Wellington). We used a high-quality set of past TC tracks from the International Best Tracks Archive for Climate Stewardship (IBTrACS) which covers 135°E to 120°W longitude to draw on past TC track patterns for the seasonal outlook. The domain for the seasonal outlook encompasses a basin that is defined by climatological properties of TC occurrences rather than geopolitical or meteorological service administrative boundaries (Diamond et al., 2012). Based on the selection of analogues, there is an expectation of reduced TC activity across the Southwest Pacific Basin for the 2025/26 season. Elevated TC risk is expected for Pacific Islands located in direct proximity east of the Coral Sea, with normal-to-elevated risk for Vanuatu and New Caledonia. Tonga, Niue and the Society Islands. Normal-to-reduced risk is expected for Papua New Guinea, the Solomon Islands, Wallis and Futuna, Tuvalu, Tokelau, and Tonga. Reduced risk is expected for American Samoa, Samoa, Niue, the Austral Islands and the Southern Cook Islands (See Table 1 and Table 4; Figure 1, 3 & 4). Normal activity is expected for Fiji and New Zealand, but with the understanding that risk may increase during the late season as TC activity picks up. Island groups that usually experience quiescent TC activity including the Marquesas, the Tuamotu Archipelago, Kiribati, and Pitcairn Island are expected to not experience TC activity. The outlook for the region indicates increased overall risk for TC tracks transiting the area to the west of the International Date Line (See Table 1 and Table 4; Figure 1, 3 & 4).

The main TC genesis region for the coming season is expected to lie within the latitudinal band between 10 – 16°S and west of 170°E where a majority of the historic tracks associated with the analogue seasons showed storm formation. There is a clear signal for an elevated risk of tropical cyclones developing and tracking over waters located west of the International Date Line during both the early and late season, but with increased risk focused on the Coral Sea and Gulf of Carpentaria during the early season. All analogue seasons had multiple Category 3 or greater strength, storms and all the analogue seasons (8 of 8) experienced at least one Category 4 or greater strength cyclone. Based on historic analogues, we suggest at least 25-40% of named storms that form during this season will transform into at least a Category 3 TC system (2-4 storms). A total of 8 named cyclones are expected during this coming season (spread of 5-9 based on past analogues), which equates to normal-reduced activity relative to an average of nine named storms that have occurred each season in the southwest Pacific basin between 1991-2020. All communities should remain vigilant even beyond the traditional end of the TC season.

A split of the analogue TC seasons into early (November – January) and late (February – April) periods suggests TC activity may be elevated along the northwestern Coral Sea during the early TC season (Figure 3). In general, TC activity is expected to increase greatly during the late season, particularly near Vanuatu, New Caledonia and close to the International Date Line to the south of Fiji.

Previous TC research has indicated cyclone track sinuosity decreases during La Niña (Malsale, 2011). However, some of the TC track trajectories in the analogues identified for the coming season suggest 'wandering' and long-lived storms are possible. TC intensity is partly related to how long developing cyclonic systems reside in the tropics and gain support for their growth from underlying warm waters. Nevertheless, lower strength TCs that have wandering tracks can still produce significant impacts on island communities and TCs of all strength should be monitored closely. In addition, the subtropical jet and South Pacific Convergence Zone (SPCZ[3]) interact and contribute to shear (which can disorganise cyclone systems) during extra-tropical transition (ETT). Hemispheric winds that help to steer storms exiting the tropical Pacific as well as the SPCZ are expected to be displaced south of normal, and the former may lead to reduced shear and increased retention of cyclone strength in the subtropics. The outcomes from the regional ocean-atmosphere patterns may also include stronger ex-TC impacts for northern New Zealand, and marine and coastal impacts from a decaying system could still be prominent.

The interplay of hemispheric-scale atmospheric circulation with the timing of short-term Madden-Julian Oscillation (MJO) activity on a 30 to 50-day cycle has significant bearing on regional TC activity. Increased frequency and more intense TC activity can be expected during the MJO 6-7 paired phase (Diamond and Renwick, 2015). Weekly statistical forecasts of TC genesis and TC activity for the SW Pacific basin are produced by MétéoFrance based on phasing of the MJO (Leroy and Wheeler, 2008). This guidance is useful for sub-seasonal regional TC guidance (see https://www.meteo.nc/nouvelle-caledonie/cyclone/coin-des-experts). Real-time MJO monitoring is also available from the Australian Bureau of Meteorology at http://www.bom.gov.au/climate/mjo/ and NOAA at https://www.cpc.ncep.noaa.gov/products/precip/CWlink/MJO/CLIVAR/clivar_wh.shtml.

TC tracks that have previously undergone ETT at 25°S latitude (Diamond et al., 2013) cover a wide area spanning east and west of the International Date Line (~165°E – 165°W). For the historical TC tracks that occurred in the eight selected analogue seasons, a vast majority underwent ETT to the west of the International Date Line. This presents a view of significantly elevated risk related to the presence of TCs and ex-TCs in the Southwest Pacific Ocean for the maritime region between 25°S - 35°S and 160°E to the International Dateline (south of New Caledonia, Vanuatu and Fiji). Extra caution for vessels navigating maritime waters in that remote area is warranted.

Previous work indicates New Zealand interacts with at least one ex-tropical cyclone passing within 550 km of the country every year on average (Lorrey et al., 2014). Some years there are none, while in other years there are more than one. For the coming TC season, the risk for New Zealand is normal. We identified seven ex-tropical cyclones using eight analogue seasons in this outlook that passed close to New Zealand, demonstrating interactions with an ex-TC during La Niña years have a near-normal probability. The historic TC seasons for this outlook with storms that passed close to New Zealand indicate a slightly elevated chance of decaying ex-tropical cyclones tracking offshore to the east of the North Island (see

[3] The South Pacific convergence zone (SPCZ) is an extensive Southern Hemisphere atmospheric circulation feature that contains one of Earth's most expansive and persistent convective cloud bands.

Figure 4). However, deteriorating storms that stalled north of the country as well as those that entered the Tasman Sea and made landfall on the South Island also occurred.

Dynamical climate model guidance summary

A synthesis of atmospheric and sea surface temperature (SST) guidance favours near or below average tropical cyclone (TC) activity for the 2025/26 SW Pacific TC season. Multi-model ensemble (MME) guidance is in good agreement with the expectations of a weak-to-moderate La Niña event in the central Pacific that is likely to emerge and exist for at least the first half of the upcoming TC season (Figure 6 and Figure 7).

Dynamical forecast guidance from the Copernicus Climate Change Service (C3S), a multi-model ensemble of seasonal predictions from various international centres, is considered in this section.

Through the austral summer (December 2025 – February 2026), mean sea level pressure (MSLP) is forecast to be below normal for much of the western and southwest sections of the Southwest Pacific basin, including the Coral Sea (Figure 7), with above normal MSLP forecast east of the Date Line and north of 20° south latitude. This is likely indicative of the SPCZ being displaced southwest of normal, a typical impact of La Niña, and one that can cause below normal rainfall for many near-equator island groups as well as islands located to the east of the International Date Line. For island nations and territories that are located farther from the equator, particularly near and south of 10˚ S to the east of the International Date Line, drier than normal conditions are expected to elevate the risk of drought as a result of the SPCZ moving southwest of normal (Figure 6). However, the nearby passage of a single tropical storm could counter that situation.

Wind shear is forecast to be reduced, or lower than average, through the austral summer. This would provide a more favourable atmospheric environment for tropical cyclone development. If reduced atmospheric wind shear co-exists with other favourable environmental conditions, such as above average SSTs, then the odds for increased TC activity (e.g., occurrence, intensity) and extended longevity of a storm system after ETT may be elevated.

Velocity potential, or divergence in the upper atmosphere which is a proxy for large scale ascent or lift, is forecast to favour the eastern Indian Ocean and Maritime Continent through about January 2026. Thereafter, there are indications that large scale lift may shift farther east toward the western Pacific Ocean for the second half of the season. If this were to eventuate, then enhanced activity, relative to normal, would likely be favoured.

Deterministic statistical model summary

The Long-Range Tropical Cyclone Outlook for the Southwest Pacific (TCO-SP) product produced by the University of Newcastle (AUS) has been incorporated into the ICU outlook since the 2020/21 season to provide support for a consensus-based ensemble of TC risk. TCO-SP is based on a different method than the analogue and dynamical approaches. The TCO-SP method is calibrated using the IBTrACS data set and several key climate indices for the Southern Hemisphere (see Magee et al., 2020 and the supplementary material for more details). For the coming Southwest Pacific TC season, the deterministic TCO-SP outlook suggests 6 named TCs may form (probable range of 4-8), indicating near below normal activity for the basin when compared with the 1991-2020 average of 8.7 TCs (Table 1, Table 4, and Figure 8). This TC count range agrees with the analogue guidance.

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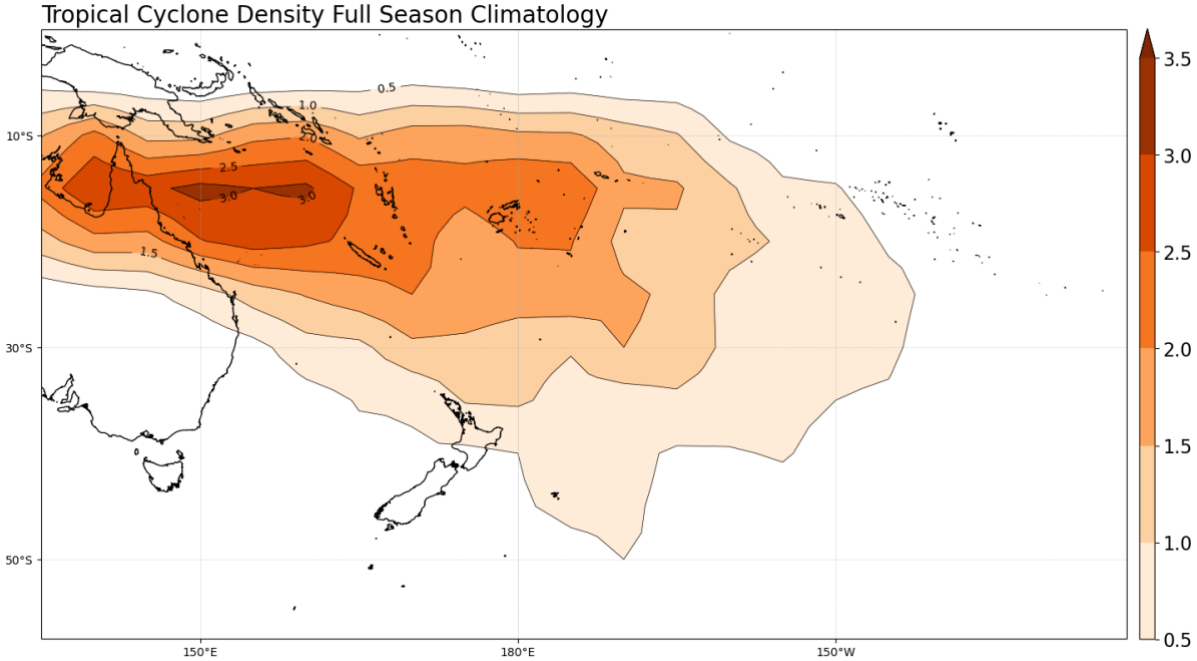
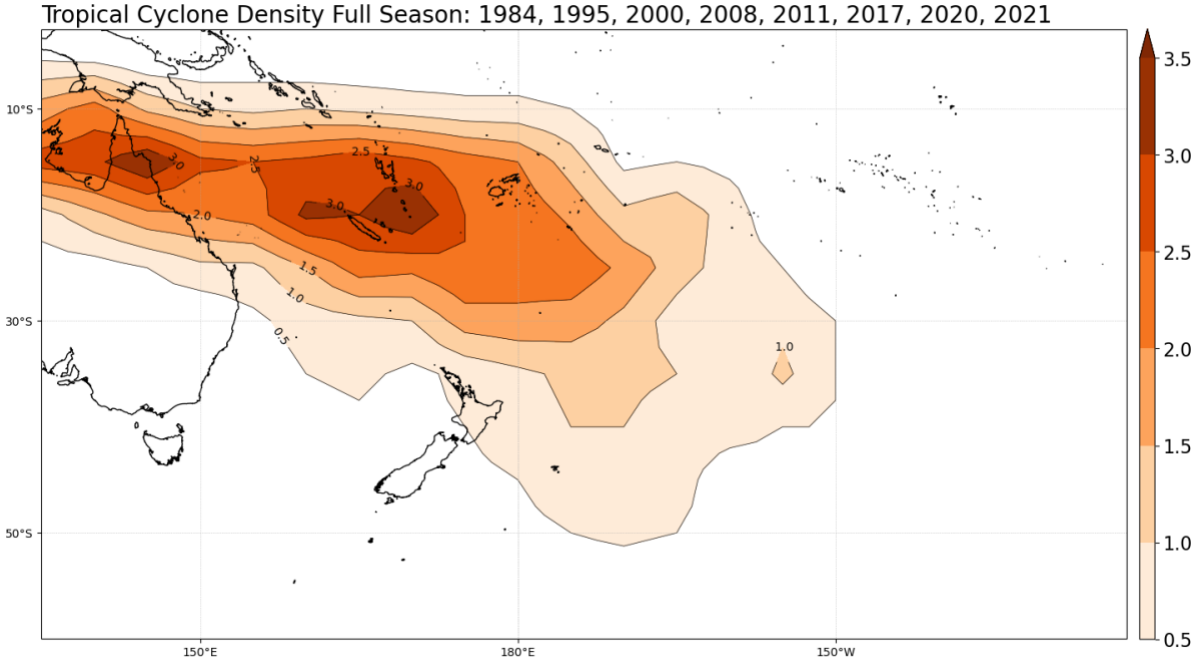
Tropical Cyclone Density Full Season Climatology



Tropical Cyclone Density Full Season: 1984, 1995, 2000, 2008, 2011, 2017, 2020, 2021



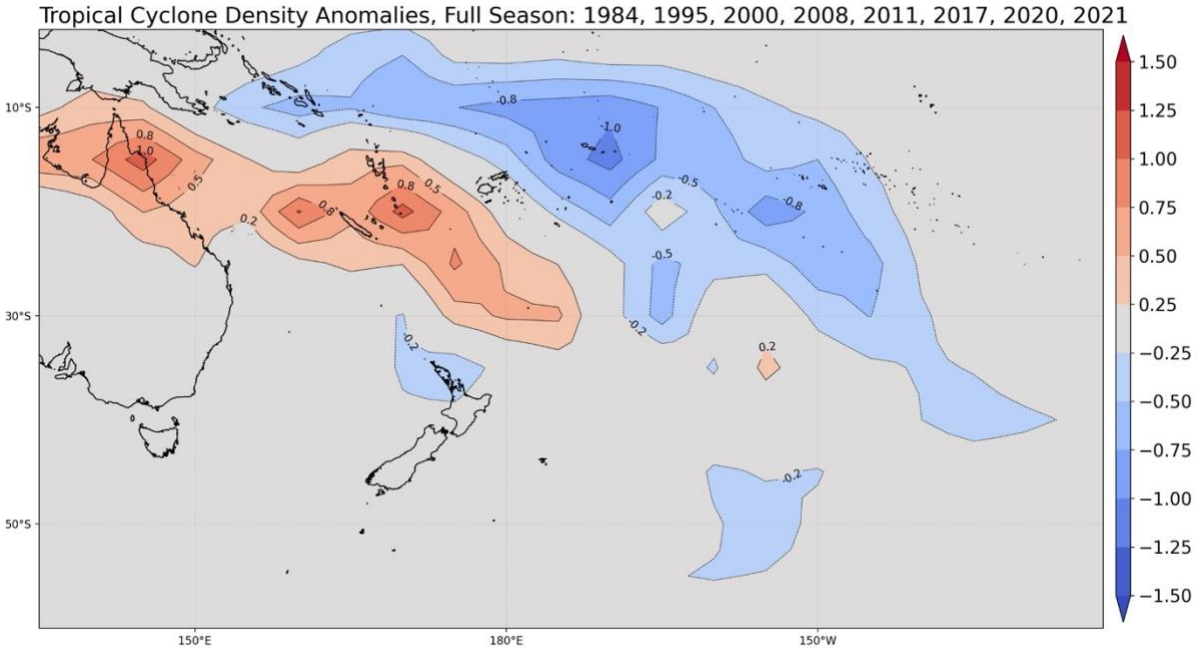


Figure 3: Number of TCs occurring for the main development season (November – April) in the Southwest Pacific (135°E to 120°W): (top panel) average number during 1991 to 2020 (normal); (centre panel) average number over selected four analogue seasons (Table 3); (bottom panel) departure from normal for the analogue seasons (difference between count in centre and top panels). For each year noted, that represents the start of the main development season (i.e. 1983 = November 1983-April 1984)

Table 2: The average number of TCs passing close to the main South Pacific Island groups between November and April based on analogue guidance but contains subjective assessments in some cases to be consistent with the wishes of the national meteorological services involved in generating this regional outlook. In addition, subjective qualification of activity (and associated risk) also recognises the small differences between the actual TC counts for the analogue composites and climatological values. The table is therefore only generally indicative of how many cyclones might be expected for any given island group for the coming season. This information feeds into the final outlook for the season as in Table 1.

Country / Territory	Climatology	Analogue seasons	Anomaly	% normal	Risk
New Caledonia	2.3	3.0	0.7	130	Elevated
Solomon Is.	1.7	1.1	-0.6	65	Normal-Reduced
Papua New Guinea	0.8	0.8	0.0	100	Normal
Vanuatu	2.3	3.0	0.7	130	Elevated
Tonga	2.0	1.6	-0.4	80	Normal-Reduced
Wallis & Futuna	2.1	1.6	-0.5	75	Normal-Reduced
Fiji	2.2	2.2	0.0	100	Normal
Samoa	1.7	0.8	-0.9	45	Reduced
American Samoa	1.6	0.6	-1.0	40	Reduced
Niue	1.4	0.6	-0.8	45	Reduced
N. New Zealand	0.8	0.7	-0.1	90	Normal
Tuvalu	1.4	0.9	-0.5	65	Normal-Reduced
Society Is.	0.7	0.1	-0.6	15	Reduced
Tokelau	1.3	0.6	-0.7	45	Reduced
S. Cooks	1.2	0.6	-0.6	50	Reduced
Austral Is.	0.7	0.1	-0.6	15	Reduced
Tuamotu	0.1	0.0	-0.1	100	Unlikely
W. Kiribati	0.1	0.0	-0.1	100	Unlikely
Marquesas	0.1	0.1	0.0	100	Unlikely
N. Cooks	0.4	0.1	-0.3	25	Unlikely
Pitcairn	0	0.0	0.0	100	Unlikely
C. Kiribati	0	0.0	0.0	100	Unlikely
E. Kiribati	0	0.0	0.0	100	Unlikely

Table 3: Previous analogue seasons and intensity of TCs that occurred in the Southwest Pacific during the November-April TC season. Categorisation of TCs aligns to the Australian Bureau of Meteorology (BoM) scale. Italicised figures for category totals are the mean of the count for that category instead of the expected total. Expected totals account for the long-term decline in named tropical cyclone counts using the analogue selection method.

Season	Number of storms Cat 1 or higher	Right: TC category (BoM scale)	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
2021-22	7		2	0	1	0	4
2020-21	9		6	1	0	0	2
2017-18	8		2	2	2	1	1
2011-12	4		1	2	0	1	0
2008-09	9		4	4	0	0	1
2000-01	7		3	2	1	1	0
1995-96	9		5	1	1	2	0
1984-85	14		4	4	3	2	1
Average	*8*		*3.4*	*2.0*	*1.0*	*0.9*	*1.1*
Expected total	8		3	2	1	1	1

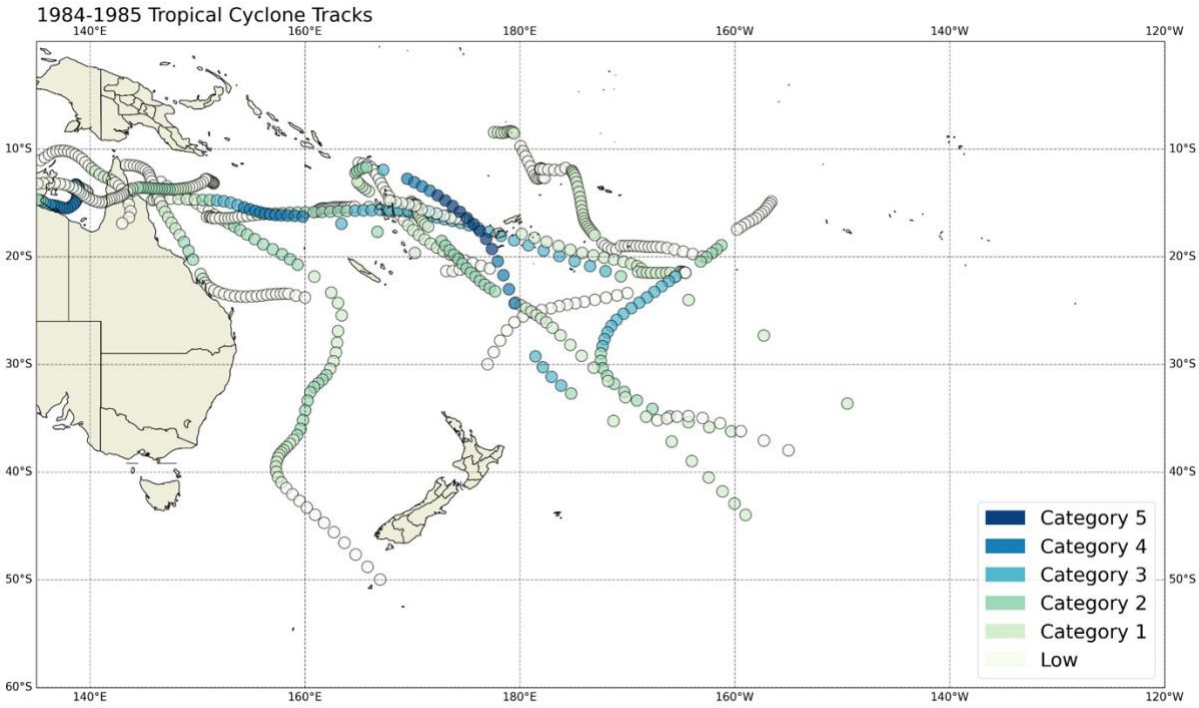
Analogue guidance summary

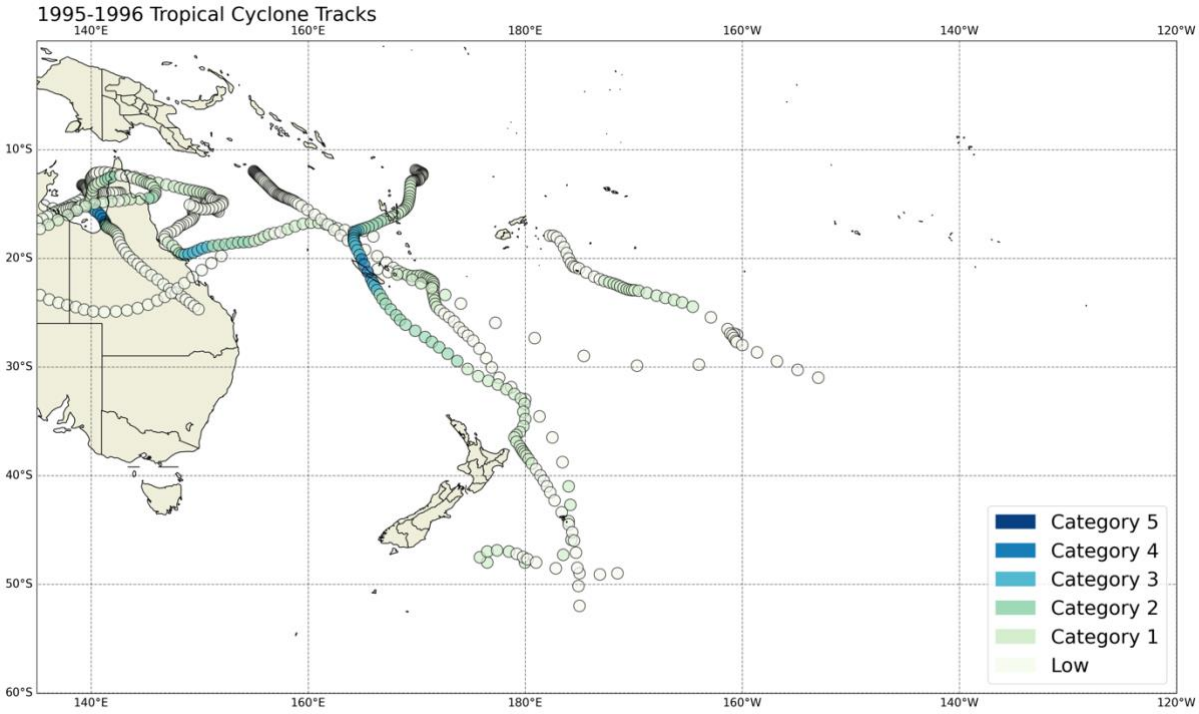
Based on the guidance from the ESNZ analogue method, a conservative range of 5 – 9 named TCs could be expected during the 2025/26 season for the Southwest Pacific basin (135° E – 120° W). The spread for the estimated cyclone activity comes from the variation between eight selected analogue seasons. The historic long-term seasonal average is just under nine named TCs for the SW Pacific basin. Most of the analogue seasons indicate a total number of cyclones that are at or below the long-term average. The long-term regional trend for TC occurrence in the SW Pacific has seen a decreasing number of named storms. The spread of the historical analogues and rounded total that is expected for the coming season encapsulates that trend.

Approximately 25-40% of the named storms that are expected to form this coming season (e.g. between 2 – 4 named tropical cyclones) may reach severe Category 3 or higher status. All the historic analogues selected for the 2025/26 outlook have at least one or more severe TCs, indicating a strong likelihood of seeing storm systems reach Category 3 or higher in the SW Pacific this season. All of the historic analogue seasons indicate at least one cyclone that reached at least Category 4 strength. This provides confidence in the statistical outlook for expected cyclone strengths and supports a conservative range of 2 – 4 severe tropical cyclones for the coming season. The seasons selected for the analogue outlook also contain multiple Category 5 cyclones (see Table 3). Despite a notable trend toward fewer named storms and stronger TCs in the SW Pacific over the past five decades, the agreement of the

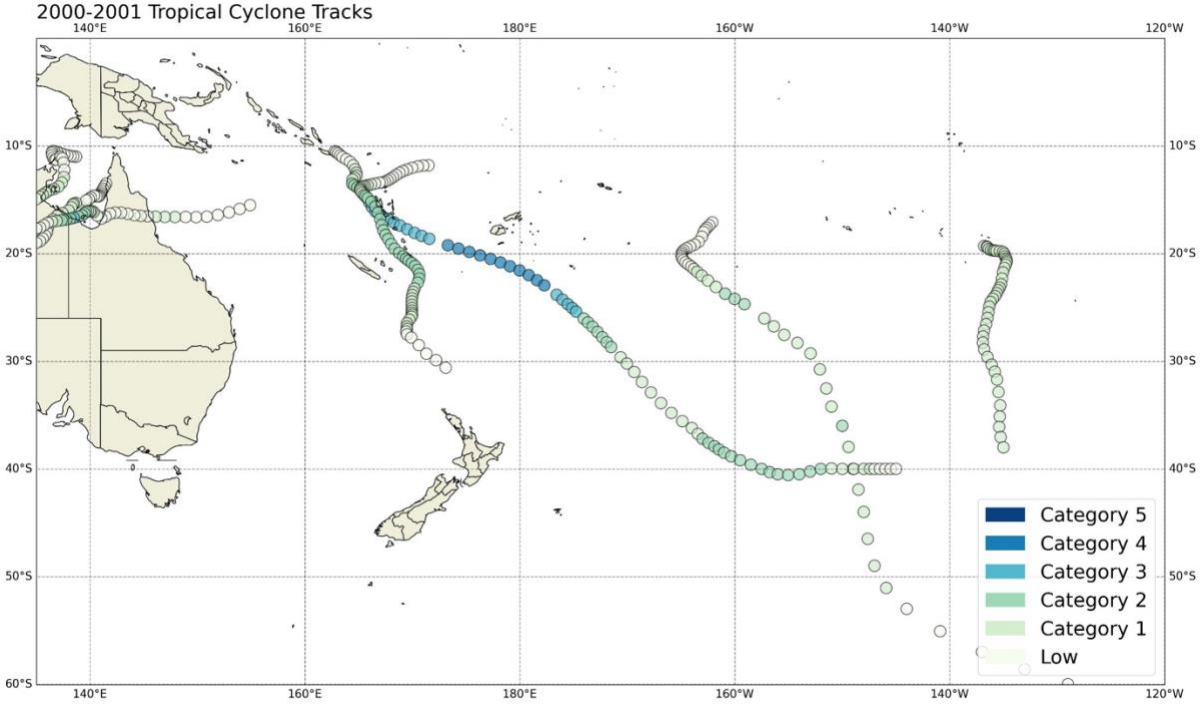
analogues raises the possibility that at least one severe storm during the upcoming season could transform into a Category 5 system, which cannot be ruled out.

For the selected analogues, three seasons show at least one ex-tropical cyclone came within 550 km of New Zealand. Five of the seasons had no ex-tropical cyclone interactions, while others had multiple interactions (1995/96; 2017/18). Some past decaying ex-tropical cyclone systems have been associated with high rainfall, damaging winds and amplified coastal wave conditions. Because the analogues have identified multiple years with an ex-tropical cyclone system interacting with the New Zealand Exclusive Economic Zone (EEZ), the risk of an interaction for the country (where at least one cyclone approaches within 550 km of land) for the 2025/26 season is normal. More of the ex-tropical cyclones that interacted with New Zealand during the selected historical analogue seasons either deteriorated or transited Pacific Ocean waters to the east of New Zealand. As such, there is a slightly higher probability of a decaying ex-tropical cyclone tracking to the east of the North Island based on historic track data (Figure 4). We also expect the risk for an interaction for New Zealand will increase as the season progresses into the 2026 calendar year.

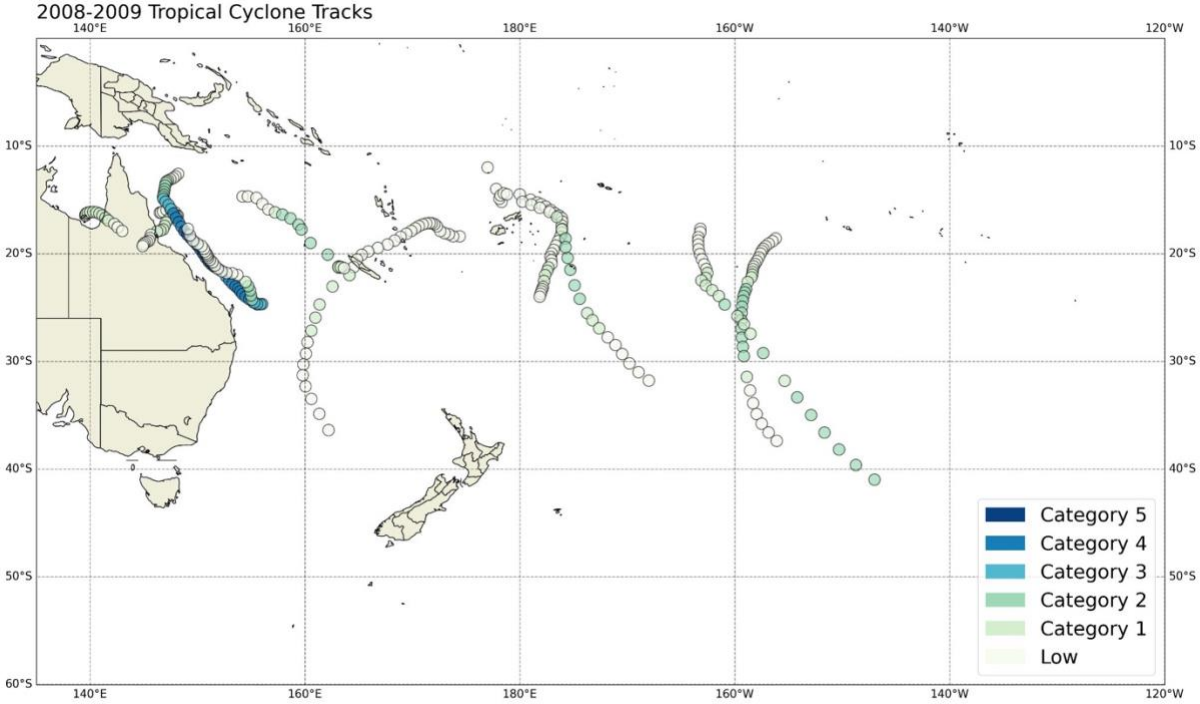

1984-1985 Tropical Cyclone Tracks
140°E
160°E
180°E
160°W
140°W
120°W
10°S
20°S
30°S
40°S
50°S
60°S
Category 5
Category 4
Category 3
Category 2
Category 1
Low


1995-1996 Tropical Cyclone Tracks
140°E
160°E
180°E
160°W
140°W
120°W
10°S
20°S
30°S
40°S
50°S
60°S
Category 5
Category 4
Category 3
Category 2
Category 1
Low

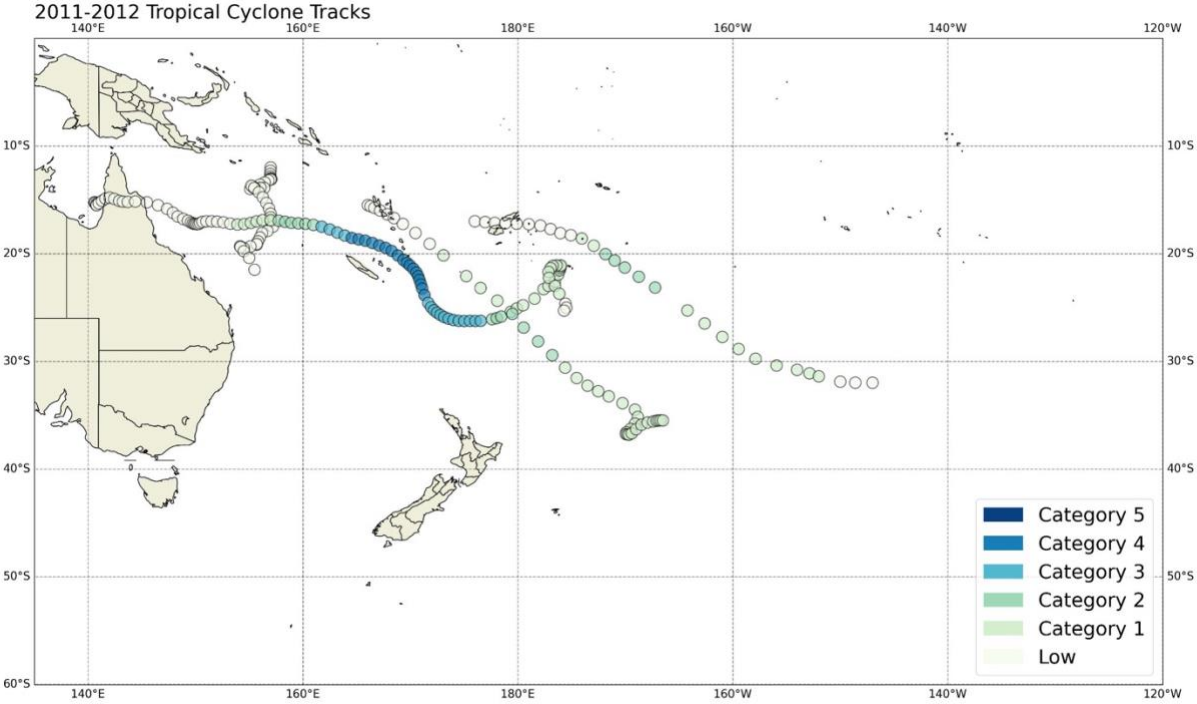
2000-2001 Tropical Cyclone Tracks



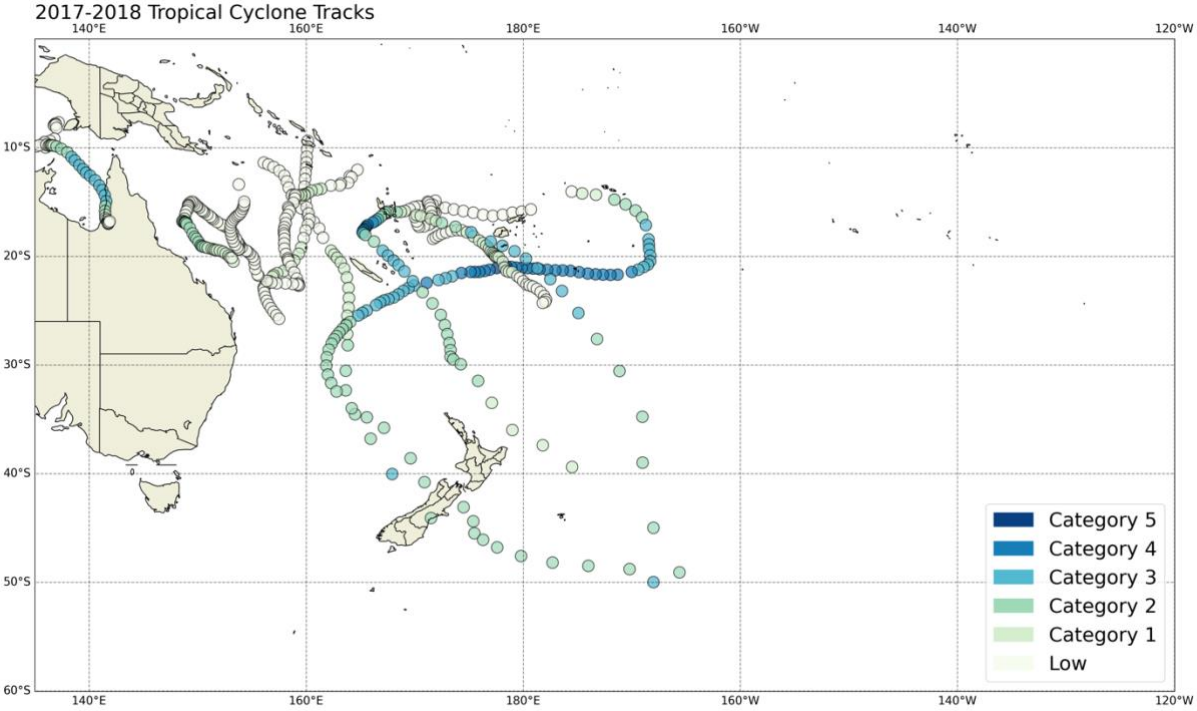
2008-2009 Tropical Cyclone Tracks



2011-2012 Tropical Cyclone Tracks



2017-2018 Tropical Cyclone Tracks



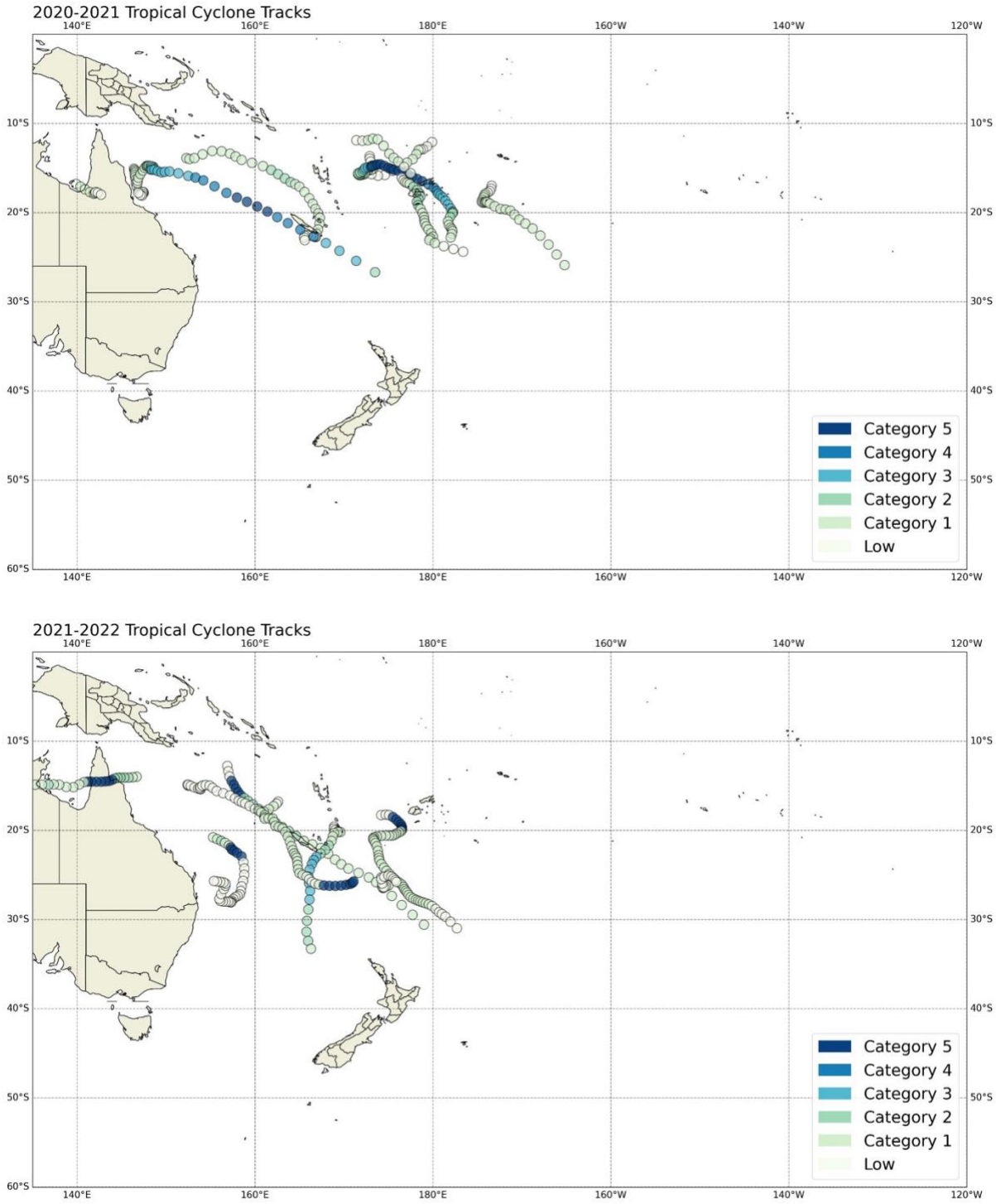


Figure 4: Plots of TC tracks and major tropical lows that were monitored for analogue seasons used in the 2024/25 seasonal forecast for the full season (November - April). Track data are courtesy of International Best Tracks Archive for Climate Stewardship (IBTRaCS)

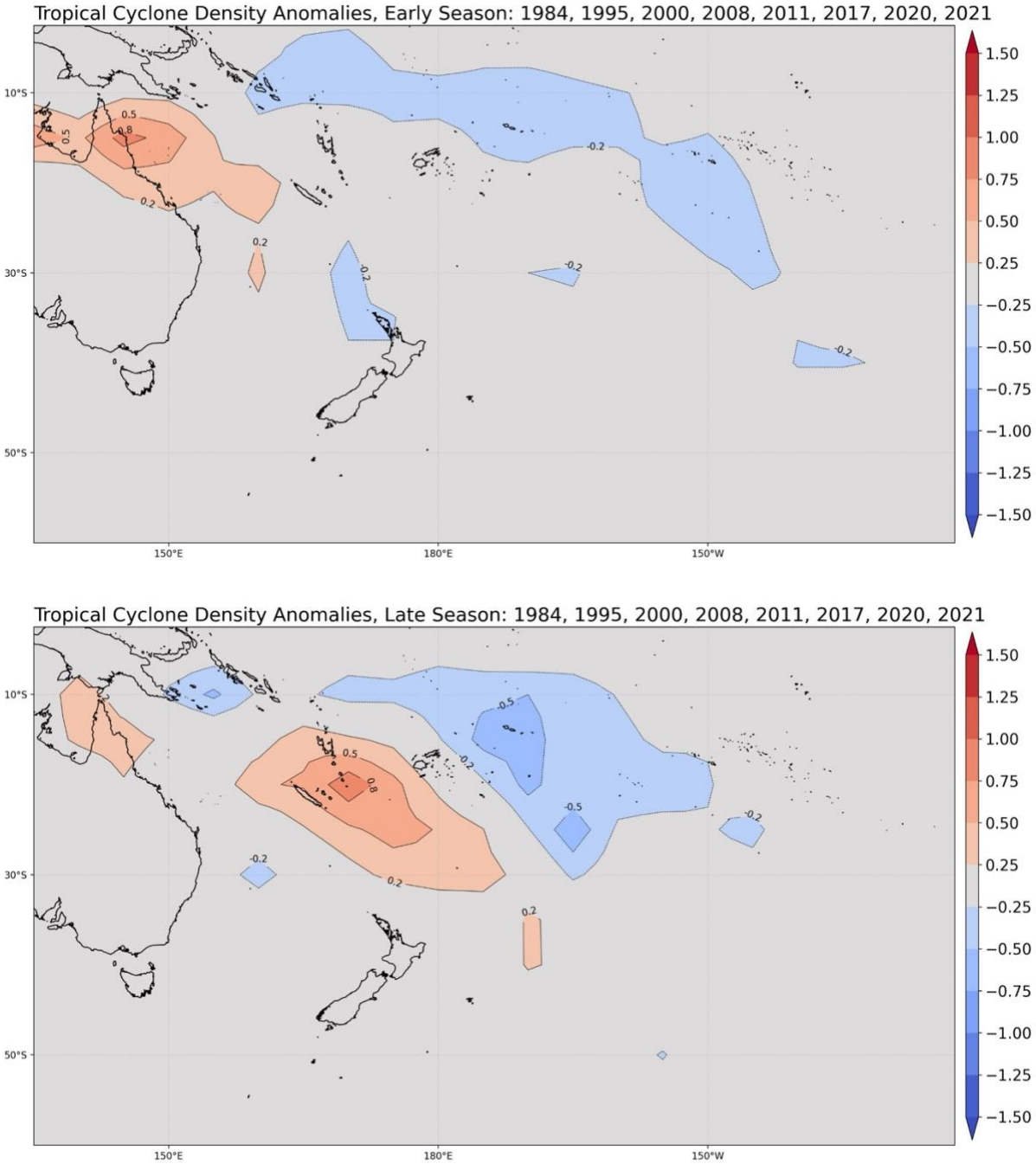


Figure 5: Early season (November to January; top panel) and late season (February to April; bottom panel) anomaly plots for selected TC analogue seasons (data courtesy of International Best Tracks Archive for Climate Stewardship (IBTrACS)). The year label notes the first month in the analogue year selection (i.e. for the early TC season "1984" = November 1984, December 1984, January 1985; and for the late TC season "1984" = February – April 1985).

ECMWF seasonal guidance, November 2025-April 2026

The Accumulated Cyclone Energy, or ACE, forecast: October 2024 ECMWF seasonal guidance indicates that below normal seasonal ACE (around 80% of normal) is most likely for the Southwest Pacific region (160˚E-120˚W) and that above normal ACE (110% of normal) is most likely for the Australian region (90˚E-160˚E). ACE is a metric derived from tropical cyclone intensity and duration, averaged across the basin.

Tropical storm (cyclone) density anomaly is forecast to be near normal or below normal for much of the eastern part of the basin, however, pockets of above normal activity is forecast in far east-southeast parts of the basin. Areas of enhanced activity are predicted in the Coral Sea, as well between New Zealand and New Caledonia.

Tropical storm (cyclone) and hurricane frequency (Category 3 or higher):
For the Southwest Pacific region, ECMWF seasonal guidance indicates that the number of tropical cyclones is most likely to be below normal (about 85-90% of normal). Guidance suggests that the frequency of severe TCs will also be below normal (about 75% of normal).

For the Australian region, ECMWF seasonal guidance indicates a near normal number of tropical cyclones (about 110% of normal), with above normal severe TCs (about 110-115% of normal). For the region as a whole, this guidance supports a near normal to below number of TCs and severe TCs for the 2025/26 tropical cyclone season. However, the dynamical guidance indicates regional variability; western areas of the basin are likely to be more active than eastern parts of the basin.

The ECMWF Southwest Pacific forecast domain for ACE is from 160˚ E to 120˚ W. ESNZ's outlook covers 135˚ E to 120˚ W, therefore the forecast generated by ESNZ extends 25˚ westward relative to the ECMWF forecast domain.

Information about the dynamical models used: information on ECMWF model skill can be found here for: tropical cyclones, severe tropical cyclones, and ACE. An overview of the multi-model ensemble used to create the rainfall and air pressure plots can be found here.

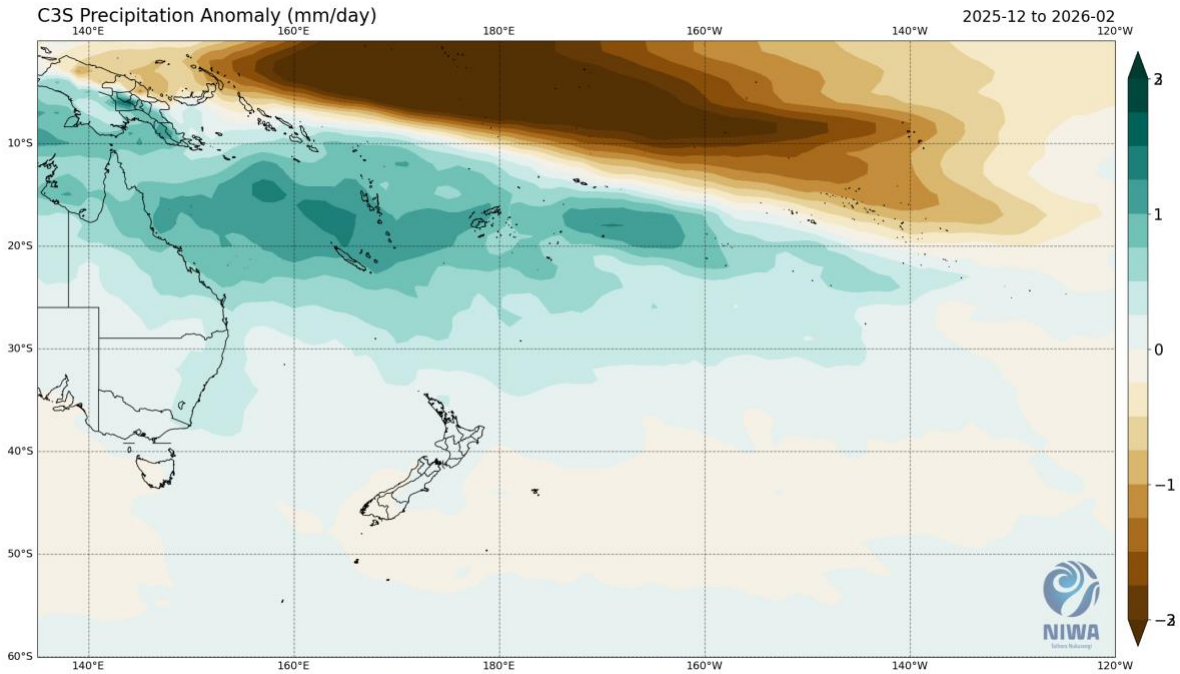


Figure 6: Multi-model ensemble forecast rainfall anomaly (mm/day), December 2025-February 2026; green (brown) shades indicate above (below) normal forecast rainfall

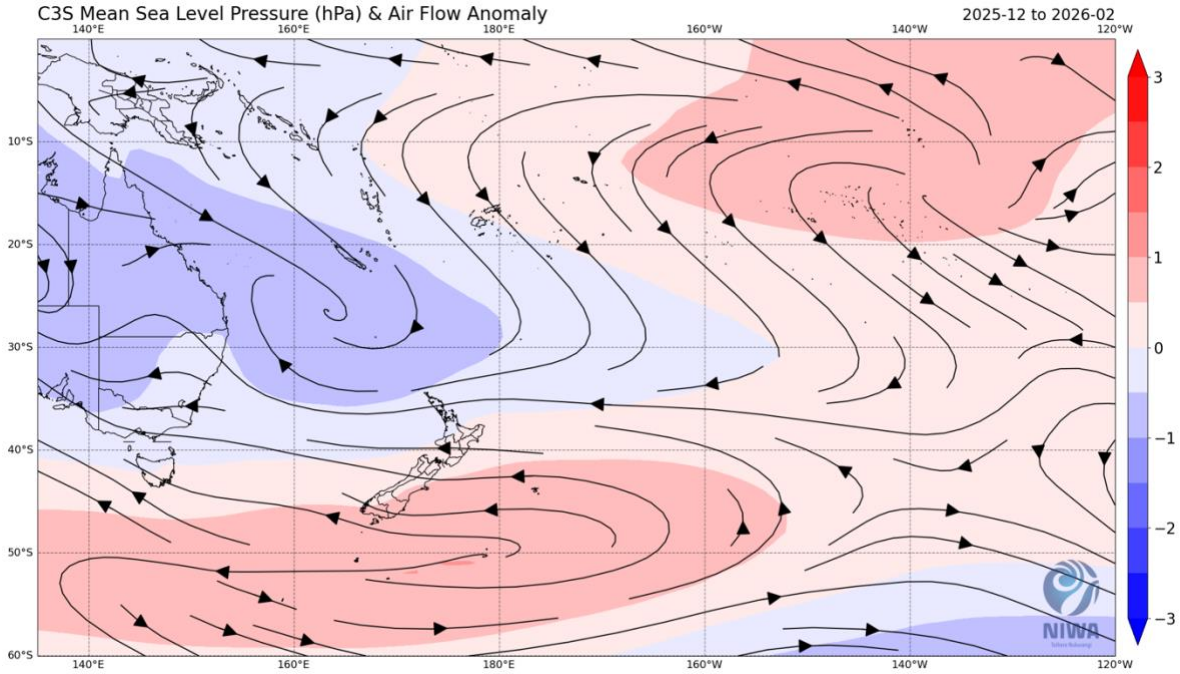


Figure 7: Multi-model ensemble forecast air pressure anomaly (hPa), December 2025-February 2026; red (blue) shades indicate above (below) normal air pressure; areas of below normal pressure in the tropics can indicate an increased potential for tropical cyclone genesis

TCO-SP (University of Newcastle) deterministic model summary

TCO-SP is a long-range tropical cyclone outlook based on a multivariate statistical method generated using Poisson Regression (Magee et al., 2020) published in *Scientific Reports.* This is the sixth year the product is available, and we have continued to incorporate it into the ICU outlook because it provides a different view from analogue and dynamical approaches. For the coming 2025/26 season, the deterministic TCO-SP outlook for Southwest Pacific TC season suggests six named TCs may form (probable range of 4-8), indicating below normal activity for the basin when compared with the 1991-2020 average of 8.7 TCs (Table 4 and Figure 8). See https://tcoutlook.com/swpacific/ for more details related to this part of the outlook.

For the SW Pacific basin, the multi-model average based on the 10 models used in TCO-SP indicates about six TCs are expected (see Figure 8). The majority of the models indicate below normal activity for the basin. The multimodel ensemble mean for the basin-wide outlook (which has been produced using objective conventions) uses all of the group of 10 models employed in the TCO-SP guidance. The expected TC count (5.8 TCs) for the SWP domain is below the average TC count (8.7 TCs). The below-normal risk profile for this region considers the percentage difference between the normal and forecast TC numbers (5.8 vs 8.7 = 33% decrease). Overall, the spatial pattern for the TCO-SP outlook displays similarities to both the analogue and dynamical guidance, with more similarities in the far eastern and central parts of the basin. Notably, TCO-SP indicates normal-elevated risk for Northern New Zealand.

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.

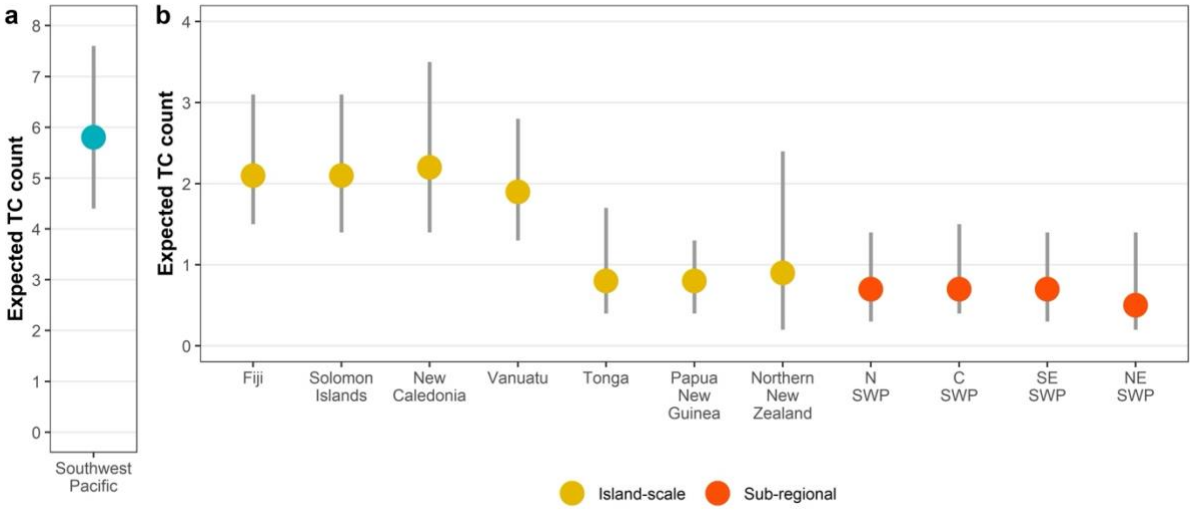


Figure 8: Expected TC count including probable range (95% confidence intervals) for the 2025/26 Southwest Pacific Tropical Cyclone Season based on TCO-SP (Magee et al., 2020). Expected TC counts are summarised for the Southwest Pacific (panel a) and island-scale and sub-regional locations (panel b).