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ENERGY, INFORMATION, DISASTER  
MANAGEMENT, ENVIRONMENT,  
CLIMATE CHANGE AND  
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NUKU'ALOFA, TONGA

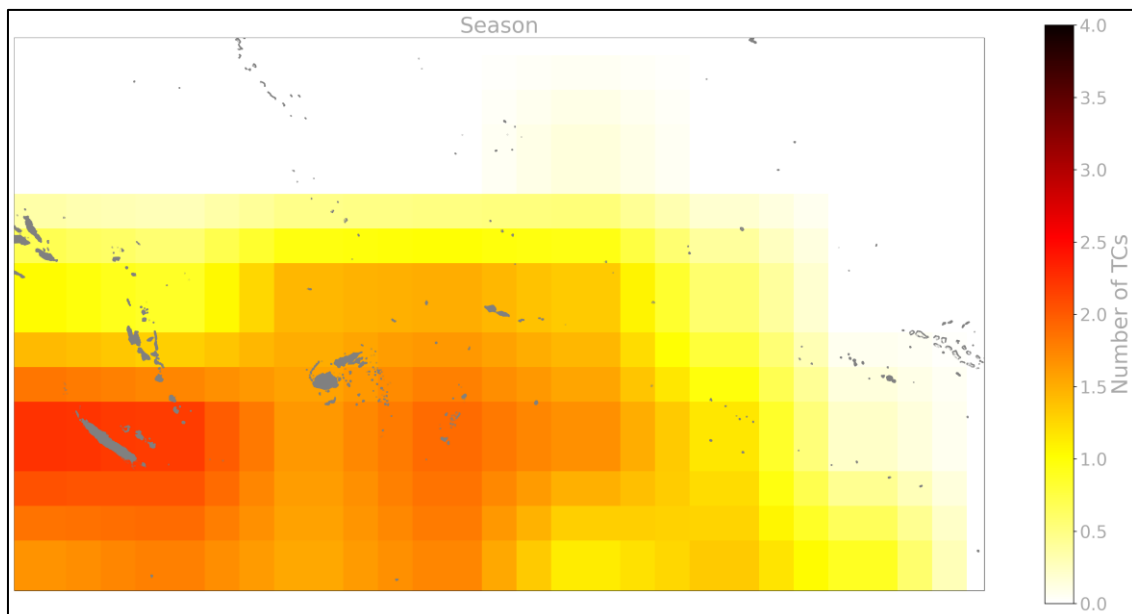
## **2024–2025 Tropical Cyclone Season Outlook for Tonga**

- 1. Expect average Tropical Cyclone Activity (1 to 2 cyclones) for Tonga.**
- 2. Moderate to High Risk (>50%) of Tonga being Affected by at least 1 Severe Tropical Cyclone (Category 3, 4 or 5).**
- 3. The peak months for Tropical Cyclone Activity for Tonga will be January, February and March 2025.**
- 4. There is a Higher chance (>50%) of Tropical Cyclone Activity to affect Ha'apai, Tongatapu and 'Eua Island Divisions.**
- 5. Expect above average rainfall for the Second half of TC Season due to projected Weak La Nina Conditions.**

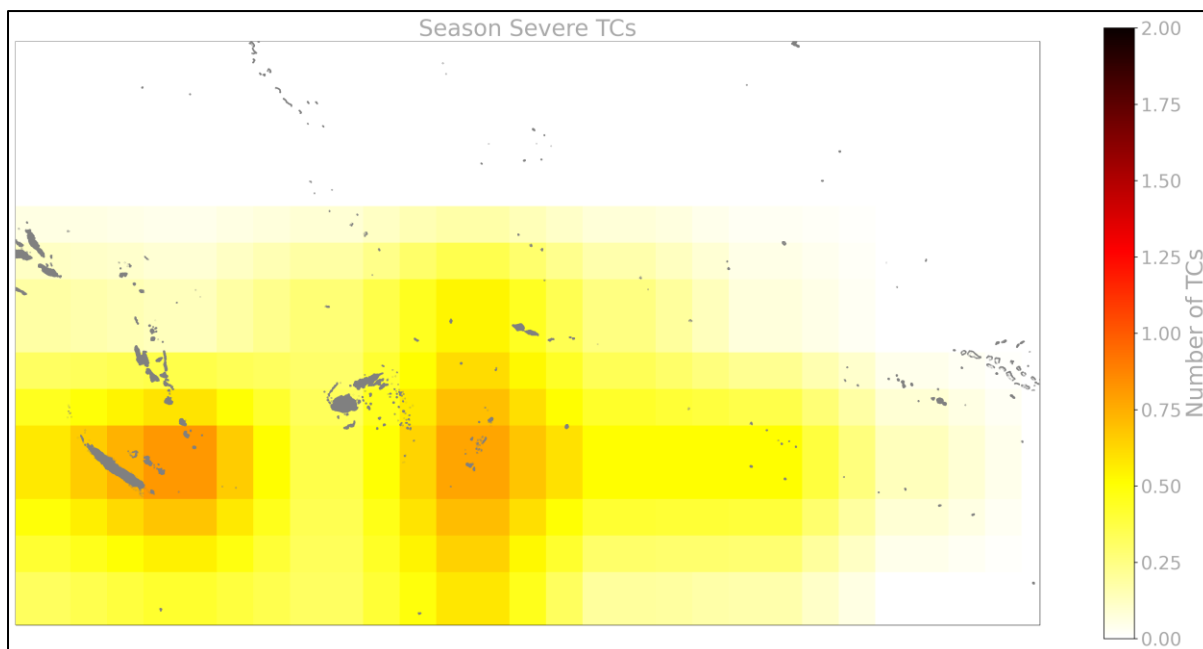
(Date of Release: 14<sup>th</sup> October 2024)

### **Summary**

The Tropical Cyclone (TC) activity expected in the 2024/25 Tropical Cyclone Season to affect Tonga is likely to be around average (1 to 2 cyclones). Historical records also indicate that Tonga could expect at least 1 cyclone and at most 3 cyclones to occur with a moderate to high chance (>50%) of at least 1 Severe Tropical Cyclone occurring.



**Figure 1: Expected number of Tropical Cyclones predicted to affect Tonga during the Tropical Cyclone Season 2024-25.**



*Figure 2: Expected number of Severe Tropical Cyclones predicted to affect Tonga during the Tropical Cyclone Season 2024-25.*

Any Tropical Cyclones passing close to the country, associated active cloud with heavy rain bands may occasionally affect Tonga with marked rainfall and possible flooding, including sea flooding of low-lying coastal areas.

Tropical Cyclones affecting Tonga in the 2024-25 season should expect to be mostly coming from the South-West and North-West quadrants (Fiji Area: 70%) and the rest from the East and North-East quadrants.

About 5 to 6 named Tropical Cyclones are expected for the South West Pacific Region (Nadi Area of Responsibility from 160E to 120W and from the Equator to 25S) for the 2024/2025 season, with 1 to 2 Tropical Cyclones reaching severe intensity (Category 3 to 5). Tropical Cyclone formation areas will be shifted to the warmer ocean temperatures in the Australia, Papua New Guinea and Solomon Island regions.

The 2024/25 Tropical Cyclone Season will likely bring above average rainfall to all island divisions of Tonga during the cyclone season due to weak La Nina conditions projected to develop for the second half of this Tropical Cyclone Season (February – April 2025). In some island divisions, the average monthly rainfall can be doubled.

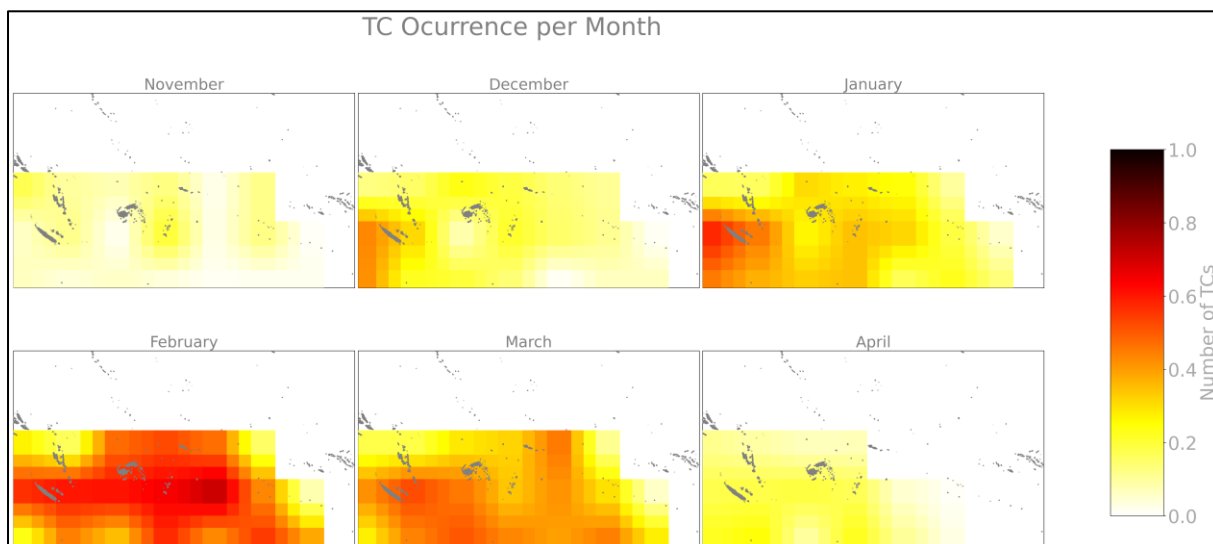
### **Tropical Cyclone (TC) Analysis and Outlook for Tonga**

The official 2024/2025 TC Season will begin on the 01<sup>st</sup> November 2024 and ends on the 30<sup>th</sup> April 2025. It should be noted that Tropical Cyclones have occasionally formed outside this period. For instance, Tropical Cyclone “Keli” which affected Northern Tonga in June 1997. The peak time for the occurrence of Tropical Cyclones in Tonga is from January to March with most events occurring in February. Sea surface analysis indicates that the El Niño–Southern Oscillation (ENSO) is currently at Neutral phase.

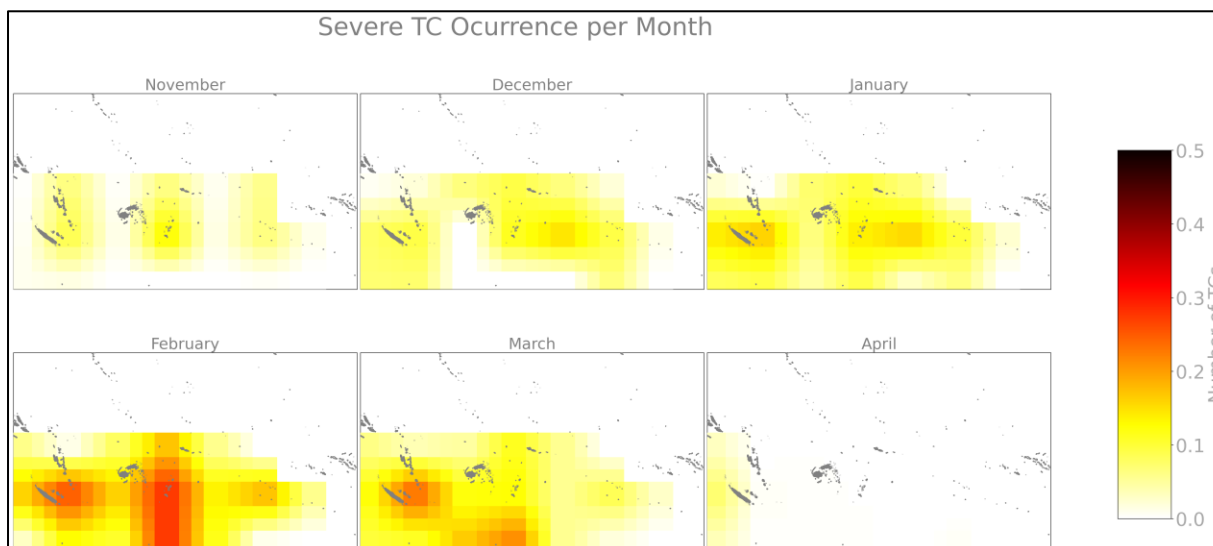
Oceanic and atmospheric forecasts for ENSO suggest a La Nina episode, of weak to moderate intensity, with a 60-70% chance of emerging by December 2024. La Nina conditions, should it develop, are likely to persist through the second half of the TC season in February-April 2025.

During every Tropical Cyclone season there are active periods in which potential for tropical cyclone formation is increased. These active periods come around every 30 to 60 days on average and lasts for a duration of about 2 to 3 weeks in our region. On average, there are about 3 active periods during tropical cyclone season for the Southwest Pacific region.

Current dynamics indicate that the first tropical cyclone activity for this season in the South West Pacific region (including Tonga) is most likely to occur around November to December 2024. These active period(s) will be updated during the course of the cyclone season to aid with preparedness.



**Figure 2: Expected tropical cyclone activity per month for the 2024-25 cyclone season, indicating that most tropical cyclone activity for Tonga should be expected to occur in the months of January to March 2025.**



**Figure 4: Expected severe tropical cyclone activity per month for the 2024-25 cyclone season, indicating that the peak month of severe tropical cyclone activity for Tonga should be expected to occur in the month of February 2025.**

## **Historical Tropical Cyclone events that have affected Tonga during Cyclone Seasons similar to the upcoming 2024-25 Cyclone Season.**

Tropical Cyclones that have affected Tonga in the past where current and forecast conditions are similar to the 2024/2025 Tropical Cyclone Season are indicated in Table 1.

<b>Tropical Cyclone Season</b>	<b>No. of Tropical Cyclones Occurring in our Area</b>	<b>No. of Severe Tropical Cyclones Occurring in our Area</b>
1983-84	2	0
2000-01	1	1
2005-06	3	1
2008-09	2	0
2016-17	1	0
2017-18	2	2
<b>Average</b>	<b>1.8 ≈ 2</b>	<b>0.6 ≈ 1</b>

*Table 1: Current sea surface temperatures patterns indicates that the 2024/25 Tropical Cyclone season is expected to be similar to 6 other Tropical Cyclone seasons in the recorded past. These are referred to as the analogue years of the following previous TC seasons: 1983-84, 2000-01, 2005-06, 2008-09, 2016-17, 2017-18.*

## **Severe Tropical Cyclones that have occurred in years similar of this coming Tropical Cyclone season**

<b>Island Group Affected</b>	<b>Severe Cyclone</b>	<b>Season</b>
Tongatapu/Eua	PAULA (Cat 4)	2000/01
All of Tonga	VAIANU (Cat 3)	2005/06
Tongatapu/Eua	GITA (Cat 4), KENI (Cat 3)	2017/18

*Table 2: Statistical Severe Tropical Cyclone events that have occurred in past TC seasons similar to this upcoming 2024-25 TC Season.*

## **Likely Sector Impacts during the 2024-2025 Tropical Cyclone Season**

### **1. Agriculture**

Although there is average cyclone occurrence for Tonga this TC season, it is the cyclone season so strong wind events will happen from time to time and crops prone to wind damage like Banana, Papaya and Breadfruit will be affected. At the same time, La Nina conditions will bring above average rainfall which will good for planting higher rainfall (big leaf plants) crops such as Kava, Taro, Banana and Kape. Weed management will be a must this season in order to get a good harvest.

### **2. Water**

Water surplus during this season is to be expected for the second half of the TC Season. Therefore, rain water should be collected and harvested this season as much as possible to be used when the rainy season ends around April 2025. Clean roofs and replace guttering's.

### **3. Health**

Higher risk of water contamination related diseases occurring due to events of above average rainfall expected and flooding of low-lying areas. Mosquitoes will be a problem from the months of December to February due to higher rainfall and higher humidity so mosquito management will be key to prevent mosquito transmitted disease like dengue.

#### **4. Infrastructure**

There is a moderate to high chance of one severe cyclone happening this season, so the public are advised to fix shutters and trim trees near the house just in case we get a severe event.

#### **5. Tourism**

Moderate to High risk for Tourism activities due to moderate to high chance of a severe cyclone occurring.

#### **6. Fisheries**

Ocean nutrients will be abundant due to La Nina conditions so expect tuna fisheries to be good as well as trolleying. Expect low to moderate coral bleaching or algae blooms.

#### **7. Utilities**

Moderate to high risk of Communications, Water and Power utilities failures due to tropical cyclone activity. But high risk of flooding related problems.

#### **8. Transport**

Moderate to high risk of above than normal cancellations to ferry and aircraft operations due to stronger winds and tropical cyclone activity. Higher risk road and drainage flooding related problems due to higher expectation of above average rainfall.

#### **Note of caution**

It should be noted that the information provided is only to be used as guidance and the given range of tropical cyclone numbers is indicative only. It is expected that the total number of tropical cyclones could be in the vicinity of the listed values, and not necessarily within the given range. The values are the most likely number of tropical cyclones based on statistical and scientific evidence, including the influences by regional and global weather and climate variability drivers and indices.

All communities should remain alert and prepared throughout the 2024-2025 Tropical Cyclone Season and take heed of tropical cyclone alerts, warnings and advisories seriously whenever it is issued to reduce the negative effects on life and property.

All communities are urged to be vigilant and follow forecast information provided by the Meteorology Department of the Ministry of MEIDECC throughout the season. An update to this outlook will be issued in January 2025.

**-END-**