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NUKU'ALOFA, TONGA

## **Update Tropical Cyclone Season (2021–2022) Outlook for Tonga**

**“There is a moderate chance (50%) for at least 1 Tropical Cyclone to occur for the remainder of the TC Season (March - April 2022)”**

**“If a Cyclone affects Tonga during the remainder of the Cyclone season, there is a moderate chance (50%) that this cyclone could be Severe”**

**“La Nina conditions persists in the Tropical Pacific and will likely return to Neutral conditions in the coming months (May – June)”**

(Date of Release: 06<sup>th</sup> March 2022)

### **Recent Tropical Cyclone Activities**

Since the official start of the 2021-2022 Tropical Cyclone (TC) season on the 1st November 2021, a total of 9 Tropical Depressions (TD) had occurred. From these depressions a total of 4 Tropical Cyclones had occurred.

<b>Tropical System</b>	<b>Tropical Cyclone Strength</b>	<b>Area Affected</b>	<b>Time period</b>
TC Ruby (TD01F)	Category 2	New Caledonia	13 <sup>th</sup> – 17 <sup>th</sup> December 2021
TD02F	Tropical Depression	Vanuatu	17 <sup>th</sup> – 20 <sup>th</sup> December 2021
TC Cody (TD03F)	Category 2	Fiji, Southwest waters of Tele-ki-Tonga & Tele-ki-Tokelau	05 <sup>th</sup> – 13 <sup>th</sup> January 2022
TD04F	Tropical Depression	Cook Islands, Niue	15 <sup>th</sup> – 18 <sup>th</sup> January 2022
TD05F	Tropical Depression	-	19 <sup>th</sup> – 22 <sup>nd</sup> January 2022
TD06F	Tropical Depression	New Caledonia	28 <sup>th</sup> – 29 <sup>th</sup> January 2022
TD07F	Tropical Depression	-	3 <sup>rd</sup> – 7 <sup>th</sup> February 2022

Severe TC Dovi (TD08F)	Category 4	Vanuatu, New Caledonia, Norfolk Island and New Zealand	06 <sup>th</sup> – 12 <sup>th</sup> February 2022
TC Eva (TD09F)	Category 1	New Caledonia, Vanuatu	26 <sup>th</sup> February – 04 <sup>th</sup> March 2022

**Table 1: Number of tropical systems that were recorded in the Southwest Pacific region since the beginning of the 2021-22 TC season up to present day. It also shows the areas affected and the timeline of each event.**

### **Summary of the Updated TC Outlook for Tonga**

During every 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. There are at least three active periods in a typical TC season for the Southwest Pacific region.

The next active period for the Southwest Pacific region (including Tonga) which indicates higher chances of TC or TD formation is predicted to *start this week and will last for another 3 weeks in our region.*

***The Tropical Cyclone (TC) activity expected for the remainder of the 2021/22 TC Season to affect Tonga is likely to be around average (1 to 2 cyclones). Historical and statistical records indicates that Tonga could expect 50% chance of at least 1 cyclone to occur for the remainder of this TC season. These cyclones will most probably occur between late March to early April with a 50% chance of at least 1 Severe TC occurring.***

Any tropical cyclones passing close to the country, associated active cloud and rain bands may occasionally affect Tonga with marked rainfall and possible flooding, including sea flooding of low-lying coastal areas. Tropical cyclones likely to affect Tonga for the remainder of the 2020/2021 season should expect to be mostly coming from the Northwest (Fiji Area – 60%) and the rest from the West, North, East and Northeast. Tropical Cyclone formation areas is still expected to develop in the warmer ocean temperatures of the Australia, Papua New Guinea, Solomon Islands and Vanuatu regions.

The peak time for the occurrence of tropical cyclones in Tonga is from January to March with most events occurring in February and could overlap to March. Sea surface analysis indicates that the average La Niña phase conditions of the Southwest Pacific region has reached its peak strength and is now weakening and the El Niño Southern Oscillation (ENSO) will return to Neutral Conditions for the coming months (May – June).

Given the diminishing signals of this La Niña event at the moment and returning to Neutral conditions in the next 3 months. Tonga normally receives average or below average rainfall activities in Neutral conditions of the sea surface temperatures.

Climate models are also indicating that near normal or below normal rainfall over majority of Tonga during for the next 3 months. With current weakening conditions of La Niña and in the view of the rainfall outlook for Tonga, there is an increased risk of meteorological droughts in some islands of Tonga for the coming 3 to 6 months (May – October).

**Historical Tropical Cyclone events that has affected Tonga during La Nina Years (similar to this TC Season 2021-22).**

Tropical Cyclones that have affected Tonga in the past where current and forecast conditions are similar to the 2021/22 Cyclone Season during **March to April** are indicated in Table 1.

<b>Tropical Cyclone Season</b>	<b>No. of Tropical Cyclone occurring in March to April timeframe of the cyclone season</b>	<b>No. of Severe Tropical Cyclone occurring in March to April timeframe of the cyclone season</b>	<b>Tropical Cyclone Name</b>
1970-71	0	0	
1973-74	1	0	TC "TINA"
1974-75	0	0	
1988-89	1	0	TC "KERRY"
1998-99	0	0	
1999-00	1	1	Severe TC "MONA"
2000-01	1	1	Severe TC "PAULA"
2007-08	0	0	
2010-11	0	0	
2011-12	0	0	
2017-18	1	1	Severe TC "KENI"
2020- 21	1	0	Severe TC "NIRAN"
<b>Average TC occurrence</b>	<b>0.5</b>	<b>Average of Severe TC occurrence</b>	<b>0.5</b>

*Table 2: Historical past Analogue Tropical Cyclone seasons with similar sea surface temperature patterns to the current Tropical Cyclone Season 2021-22 with the indicated number of TC occurring in the March – April timeframe.*

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

<b>Island Group Affected</b>	<b>Severe Cyclone</b>	<b>Season</b>
Niuafu'ou	VAL (Cat 4)	1974/75
Ha'apai	NIGEL (Cat 3), ERIC (Cat 4)	1984/85
Tongatapu/Eua	MONA (Cat 3)	1999/00
Tongatapu/Eua	PAULA (Cat 4)	2000/01
Tongatapu/'Eua	VAIANU (Cat 3)	2005/06
Tongatapu/Eua	GITA (Cat 4), KENI (Cat 3)	2017/18
Tongatapu/Eua	ANA (Cat 3), YASA (Cat 5)	2020/21

*Table 3: Higher risk for a Severe Tropical Cyclone to affect Tongatapu and 'Eua land areas or waters during the 2021/22 Cyclone Season*

**Tropical Cyclones affecting Island Groups during La Nina Tropical Cyclone Seasons with Sea Surface Temperatures similar to this year**

<b>Island Groups Affected</b>	<b>Number of Cyclones</b>	<b>Tropical Cyclone Season</b>
Niuafou'ou	1	1974/75
Niuatoputapu	1	1988/89
Niuatoputapu	2	1999/2000
Vava'u	1	1973/74
Vava'u	2	1999/2000
Vava'u	1	2011/12
Vava'u	1	2020/21
Ha'apai,	2	1999/2000
Ha'apai	1	2007/08
Ha'apai	1	2010/11
Tongatapu & 'Eua	1	1973/74
Tongatapu & 'Eua	1	1988/89
Tongatapu & 'Eua	1	1998/1999
Tongatapu & 'Eua	2	1999/2000
Tongatapu & 'Eua	1	2000/01
Tongatapu & 'Eua	1	2007/08
Tongatapu & 'Eua	2	2010/11
Tongatapu & 'Eua	1	2011/12
Tongatapu & 'Eua	2	2017/18
Tongatapu & 'Eua	2	2020/21

*Table 4: Tropical Cyclones that affected island groups during past similar Tropical Cyclone seasons to this upcoming Tropical Cyclone season 2021/22.*

Past data in Table 4, shows that there is a higher risk of Tropical Cyclones crossing over Tongatapu and Eua than other parts of Tonga.

**Likely Sector Impacts for the remainder of the 2021-2022 Tropical Cyclone Season**

**1. Agriculture**

Although there is less likelihood of Cyclone occurrence, 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 for the remainder of this season in order to get a good harvest.

**2. Water**

Water surplus during is to be expected for the remainder of the season. Therefore, rain water should be collected and harvested this season as much as possible to be used when the dry season starts after April 2022. Clean roofs and replace guttering's when needed during this last few months of the cyclone season.

### **3. Health**

Higher risk of water contamination related diseases occurring due to above average rainfall. Mosquitoes will be abundant due to higher rainfall so mosquito management will be key to prevent mosquito transmitted disease like dengue.

### **4. Infrastructure**

There is a 50% chance of one severe cyclone happening for the remainder of 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 risk for Tourism activities due to 50% chance of a severe cyclone occurring.

### **6. Fisheries**

Ocean nutrients is still expected to be abundant due to La Nina conditions so expect tuna fisheries to be good as well as trolleying. But expect this trend to decrease as we approach May to July 2022. Expect low to moderate coral bleaching or algae blooms.

### **7. Utilities**

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

### **8. Transport**

Moderate risk of above than normal cancellations to ferry and aircraft operations due to stronger winds and tropical cyclone activity. Moderate risk of flooding related problems due to decreasing expectations of normal or below normal rainfall in the next 3 to 6 months.

### **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 to be prepared throughout the remainder of the 2021-2022 Tropical Cyclone Season and take heed of tropical cyclone alerts, warnings and advisories seriously whenever it is issued to reduce the effects on life and property.

All communities are urged to be vigilant and follow official forecast information provided by the Meteorology Department of the Ministry of MEIDECC throughout the remainder of the TC season. An update to this outlook will be issued around late April 2021.

**-END-**