

# Pacific Islands - Online Climate Outlook Forum (OCOF) No. 161

Country: Tonga

**TABLE 1: Monthly Rainfall**

Station (include data period)	Nov-2020	Dec-2020	Jan-2021				
			Total (mm)	33%tile	67%tile	Median	Rank
	Total (mm)	Total (mm)	Rainfall (mm)				
Northern Division							
Niuafo'ou (1971-2021)	130.9	472.6	346.5	209.3	362.4	245.0	29/48
Niuaatoputapu (1947-2021)	183.1	540.1	256.1	210.4	296.0	239.5	41/74
Central Division							
Vava'u (1947-2021)	380.9	347.5	527.4	172.3	305.7	239.0	66/75
Ha'apai (1947-2021)	48.3	247.9	417.1	123.0	255.7	183.0	67/75
Southern Division							
Fua'amotu (1979-2021)	58.8	132.0	598.3	132.0	293.4	194.0	42/42
Nuku'alofa (1944-2021)	65.7	118.7	559.2	119.0	254.7	197.0	76/77

**TABLE 2: Three-month Rainfall for November 2020 to January 2021**

Station	Three-month Total	33%tile	67%tile	Median	Rank	SCOPIC forecast probabilities based on NINO3.4 August-September 2020				Verification: Consistent, Near- consistent, Inconsistent?	
	Rainfall (mm)					B-N	N	A-N	LEPS		
Northern Division											
Niuafo'ou (1971-2021)	950.0	Normal	699.0	996.0	798.0	29/44	21	37	42	4	Near-consistent
Niuaatoputapu (1947-2021)	979.3	Above normal	618.2	847.3	751.0	58/69	25	28	47	14	Consistent
Central Division											
Vava'u (1947-2021)	1255.8	Above normal	465.0	807.0	614.0	70/74	16	37	47	23	Consistent
Ha'apai (1947-2021)	713.3	Above normal	306.0	570.3	447.0	62/74	14	40	46	24	Consistent
Southern Division											
Fua'amotu (1979-2021)	789.1	Above normal	392.0	615.8	479.0	35/41	14	34	52	20	Consistent
Nuku'alofa (1944-2021)	743.6	Above normal	317.0	568.0	433.4	64/77	12	39	49	27	Consistent

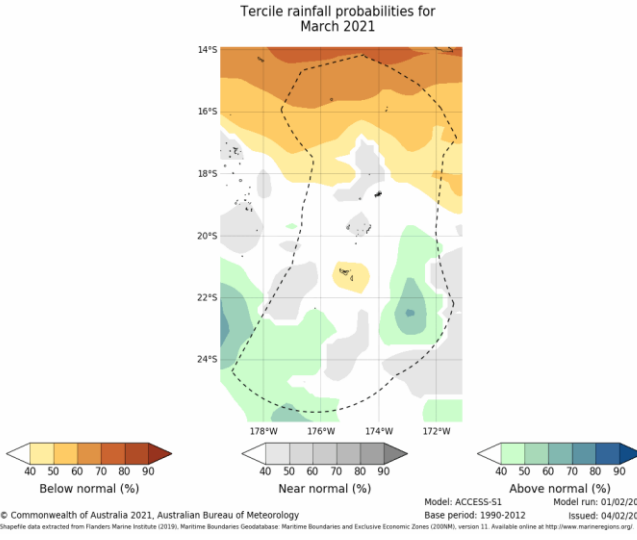
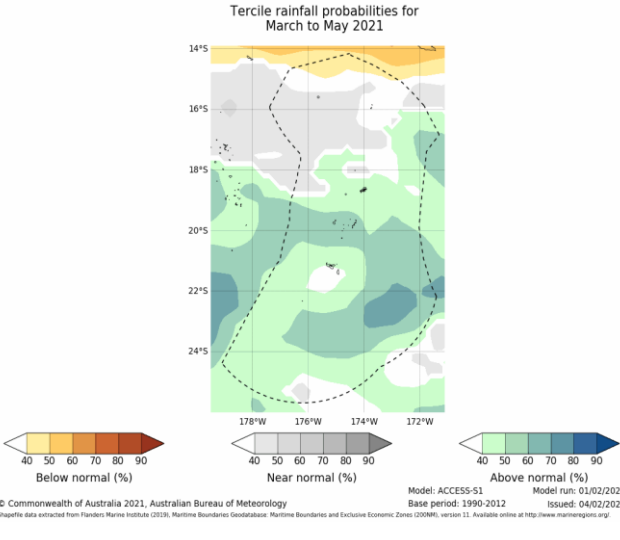
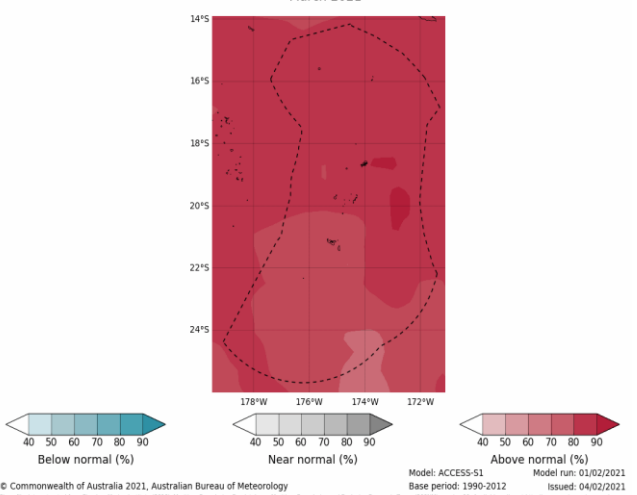
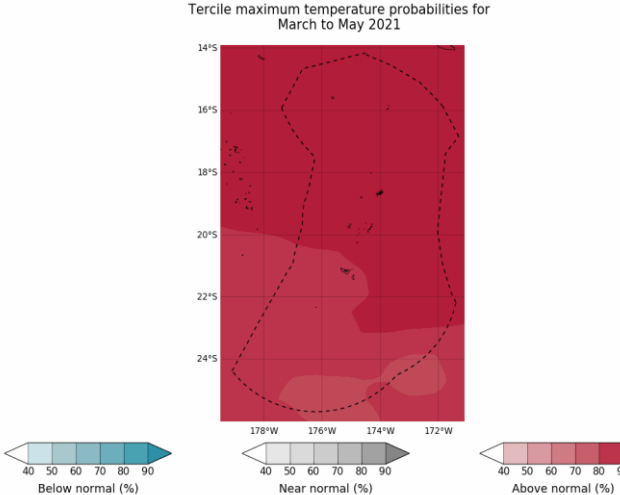
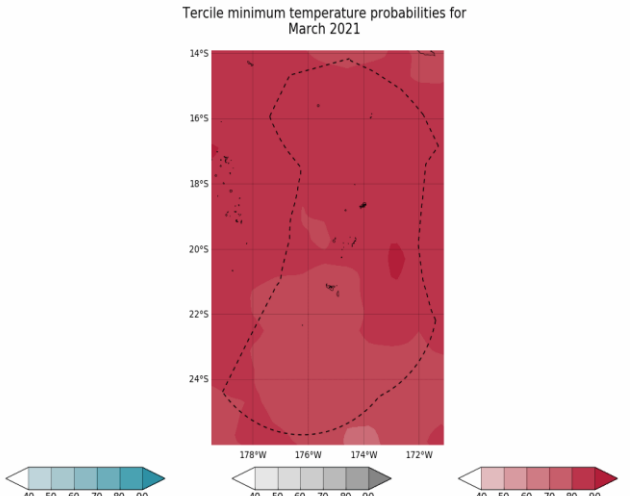
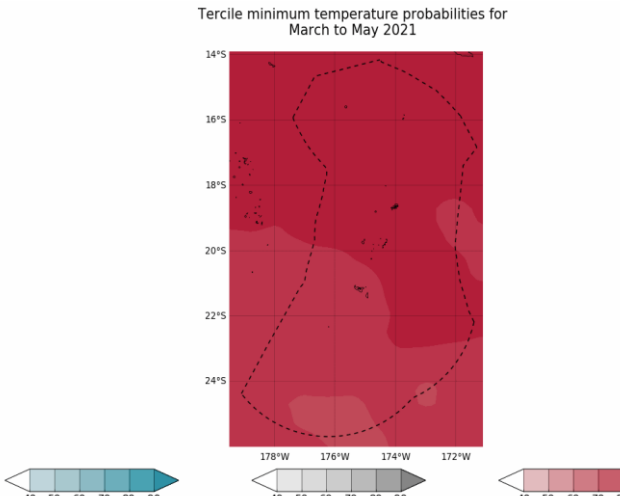
**TABLE 3: Seasonal Climate Outlooks using SCOPIC for March to May 2021**

Predictor and Period used: NINO3.4 for December 2020 to January 2021

Station	Below Median (prob)	Median Rainfall (mm)	Above Median (prob)		LEPS (%) [whole numbers]	Hit-rate (%) [whole numbers]
<i>Northern Division</i>						
Niuafo'ou (1971-2021)	59	758.0	41		2	63
Niuaatoputapu (1947-2021)	50	630.0	50		-2	31
<i>Central Division</i>						
Vava'u (1947-2021)	48	707.1	52		-1	51
Ha'apai (1947-2021)	46	557.5	54		0	51
<i>Southern Division</i>						
Fua'amotu (1979-2021)	40	508.0	60		2	63
Nuku'alofa (1944-2021)	47	514.5	53		-1	49

Station	Below Normal (prob)	33%ile Rainfall (mm)	Normal (prob)	67%ile Rainfall (mm)	Above Normal (prob)	LEPS (%) [whole numbers]	Hit-rate (%) [whole numbers]
<i>Northern Division</i>							
Niuafo'ou (1971-2021)	34	639.8	35	801.1	31	-2	19
Niuaatoputapu (1947-2021)	36	583.3	32	743.2	32	-1	26
<i>Central Division</i>							
Vava'u (1947-2021)	30	594.3	31	800.0	39	0	36
Ha'apai (1947-2021)	31	443.0	27	639.0	42	1	42
<i>Southern Division</i>							
Fua'amotu (1979-2021)	19	423.3	49	588.0	32	1	44
Nuku'alofa (1944-2021)	24	453.0	37	597.0	39	2	30

**TABLE 4: Monthly and Seasonal Climate Outlooks using ACCESS-S for March to May 2021**

Monthly rainfall	Seasonal rainfall
<p>Tercile rainfall probabilities for March 2021</p>  <p>© Commonwealth of Australia 2021, Australian Bureau of Meteorology  Model: ACCESS-S1  Base period: 1990-2012  Model run: 01/02/2021  Issued: 04/02/2021  Shapefile data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at <a href="http://www.maritimeregions.org/">http://www.maritimeregions.org/</a></p>	<p>Tercile rainfall probabilities for March to May 2021</p>  <p>© Commonwealth of Australia 2021, Australian Bureau of Meteorology  Model: ACCESS-S1  Base period: 1990-2012  Model run: 01/02/2021  Issued: 04/02/2021  Shapefile data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at <a href="http://www.maritimeregions.org/">http://www.maritimeregions.org/</a></p>
Monthly Tmax	Seasonal Tmax
<p>Tercile maximum temperature probabilities for March 2021</p>  <p>© Commonwealth of Australia 2021, Australian Bureau of Meteorology  Model: ACCESS-S1  Base period: 1990-2012  Model run: 01/02/2021  Issued: 04/02/2021  Shapefile data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at <a href="http://www.maritimeregions.org/">http://www.maritimeregions.org/</a></p>	<p>Tercile maximum temperature probabilities for March to May 2021</p>  <p>© Commonwealth of Australia 2021, Australian Bureau of Meteorology  Model: ACCESS-S1  Base period: 1990-2012  Model run: 01/02/2021  Issued: 04/02/2021  Shapefile data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at <a href="http://www.maritimeregions.org/">http://www.maritimeregions.org/</a></p>
Monthly Tmin	Seasonal Tmin
<p>Tercile minimum temperature probabilities for March 2021</p>  <p>© Commonwealth of Australia 2021, Australian Bureau of Meteorology  Model: ACCESS-S1  Base period: 1990-2012  Model run: 01/02/2021  Issued: 04/02/2021  Shapefile data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at <a href="http://www.maritimeregions.org/">http://www.maritimeregions.org/</a></p>	<p>Tercile minimum temperature probabilities for March to May 2021</p>  <p>© Commonwealth of Australia 2021, Australian Bureau of Meteorology  Model: ACCESS-S1  Base period: 1990-2012  Model run: 01/02/2021  Issued: 04/02/2021  Shapefile data extracted from Flanders Marine Institute (2019), Maritime Boundaries Geodatabase: Maritime Boundaries and Exclusive Economic Zones (200NM), version 11. Available online at <a href="http://www.maritimeregions.org/">http://www.maritimeregions.org/</a></p>

## **Summary Statements**

### **Rainfall for January 2021:**

Above normal rainfall was recorded at Vava'u, Ha'apai, Fua'amotu and Nuku'alofa, and normal rainfall was recorded at Niuafo'ou and Niuatoputapu. Fua'amotu recorded its highest January rainfall in 42 years of record, while Nuku'alofa recorded its second highest.

### **Accumulated rainfall for November 2020 to January 2021, including outlook verification:**

Rainfall was normal for Niuafo'ou, while above normal rainfall was recorded across the rest of the country. Vava'u had its fifth highest November- January rainfall on record, and Fua'amotu recorded its seventh highest.

The outlook issued in October was verified as Consistent at most sites, apart from Niuafo'ou whose outlook was Near-consistent.

### **Outlooks for March to May 2021:**

#### **1. SCOPIIC:**

**Ha'apai:** The outlook for season shows above normal as the most likely outcome, with below normal the next most likely. Normal is the least likely.

**Fua'amotu:** The outlook for season shows normal as the most likely outcome, with above normal the next most likely. Below normal is the least likely.

**Nuku'alofa:** The outlook for season shows a near-equal likelihood of above normal and normal rainfall. Below normal is the least likely.

**Niuafo'ou, Niuatoputapu and Vava'u:** The outlook offers little guidance as the chances of below normal, above normal and normal are similar.

#### **2. ACCESS-S:**

##### **Monthly rainfall:**

The outlook offers little guidance for March 2021 across most of the central one-third of the country, with near normal rainfall favoured for Ha'apai and Vava'u. Below normal rainfall is favoured across the north, including Niuafo'ou, Niuatoputapu. Below normal is also the most likely in a small region surrounding Nuku'alofa and Fua'amotu, while above normal falls are favoured over the southwestern and southeastern side of the EEZ.

##### **Monthly maximum and minimum temperatures:**

Above normal temperatures are favoured across the country for March 2021.

##### **Seasonal rainfall:**

Above normal rainfall is most likely in March to May 2021 across the central and southern parts of the country, including Nuku'alofa, Fua'amotu, Ha'apai and Vava'u. Near-normal is the most likely over much of the north including Niuafo'ou, but there's little guidance for Niuatoputapu.

##### **Seasonal maximum and minimum temperature:**

Above normal temperatures are favoured across the country for March to May 2021.

**NB: The X LEPS % score has been categorised as follows:**

Very Low:  $X < 0.0$

Low:  $0 \leq X < 5$

Moderate  $5 \leq X < 10$

Good:  $10 \leq X < 15$

High:  $15 \leq X < 25$

Very High:  $25 \leq X < 35$  Exceptional:  $X \geq 35$

**TABLE 5: Stakeholder Engagement- Evaluations of how effective NMS engage with stakeholders**

<b>Product</b>	<b>Date: January 2021</b>	<b>Stakeholder</b>	<b>Total Number of Participants</b>	<b>Number of male</b>	<b>Number of female</b>
Climate Bulletin	16 January	General public	132	66	34
EAR Watch					
Monthly Climate Briefing					
Ocean Bulletin		General public			
<b>Total</b>			132		