Pacific Islands - Online Climate Outlook Forum (OCOF) No. 163

Country: Tonga

TABLE 1: Monthly Rainfall

Station (include data period)	Jan-2021	Feb-2021	Mar-2021				
			Total (mm)	33%tile	67%tile	Median	Rank
	Total (mm)	Total (mm)	Rainfall (mm)				
Northern Division							
Niuafo'ou (1971-2021)	346.5	420.2	76.6	210.0	343.0	270.0	**3/50**
Niuatoputapu (1947-2021)	256.1	418.6	186.5	173.2	274.0	227.0	28/71
Central Division							
Vava'u (1947-2021)	527.4	336.8	179.2	225.3	343.0	285.0	15/75
Ha'apai (1947-2021)	417.1	279.2	179.5	178.0	312.7	233.8	25/75
Southern Division							
Fua'amotu (1979-2021)	598.3	272.9	174.4	158.0	253.0	190.9	19/42
Nuku'alofa (1944-2021)	559.2	240.5	214.0	186.0	267.8	226.0	39/77

TABLE 2: Three-month Rainfall for January to March 2021

Station	Three-month Total		33%tile	67%tile	Median	Rank	SCOPIC forecast probabilities based on NINO3.4 October-November 2020				Verification: Consistent, Near-consistent, Inconsistent?
	Rainfall (mm)						B-N	N	A-N	LEPS	
Northern Division											
Niuafo'ou (1971-2021)	843.3	Normal	719.0	959.3	893.5	21/45	14	**44**	42	6	Consistent
Niuatoputapu (1947-2021)	861.2	Normal	641.1	925.0	803.8	44/71	13	27	**60**	20	Near-consistent
Central Division											
Vava'u (1947-2021)	1043.4	Above normal	720.3	927.1	854.3	56/75	21	33	**46**	6	Consistent
Ha'apai (1947-2021)	875.8	Above normal	563.3	784.0	642.0	60/75	12	35	**53**	17	Consistent
Southern Division											
Fua'amotu (1979-2021)	1045.6	Above normal	471.6	785.7	676.0	**38/42**	8	20	**72**	26	Consistent
Nuku'alofa (1944-2021)	1013.7	Above normal	518.0	838.0	671.0	69/77	17	30	**53**	12	Consistent

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

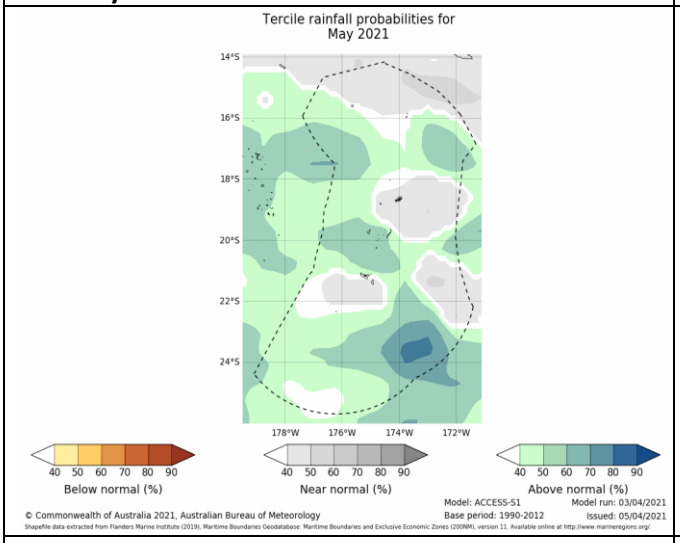
Predictor and Period used: NINO3.4 for February to March 2021

Station	Below Median (prob)	Median Rainfall (mm)	Above Median (prob)		LEPS (%) [whole numbers]	Hit-rate (%) [whole numbers]
Northern Division						
Niuafo'ou (1971-2021)	40	430.5	60		2	63
Niuatoputapu (1947-2021)	46	364.2	54		0	55
Central Division						
Vava'u (1947-2021)	38	365.0	62		5	56
Ha'apai (1947-2021)	39	246.0	61		4	53
Southern Division						
Fua'amotu (1979-2021)	38	366.0	62		3	59
Nuku'alofa (1944-2021)	41	298.0	59		2	51

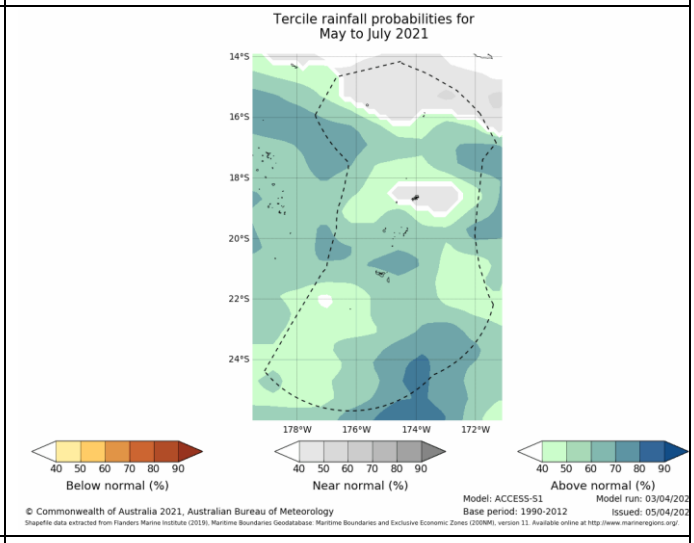
Station	Below Normal (prob)	33%ile Rainfall (mm)	Normal (prob)	67%ile Rainfall (mm)	Above Normal (prob)	LEPS (%) [whole numbers]	Hit-rate (%) [whole numbers]
Northern Division							
Niuafo'ou (1971-2021)	30	365.2	31	474.4	39	-1	39
Niuatoputapu (1947-2021)	27	322.0	31	421.0	42	1	31
Central Division							
Vava'u (1947-2021)	24	304.0	34	406.0	42	3	37
Ha'apai (1947-2021)	26	216.0	39	315.6	35	0	39
Southern Division							
Fua'amotu (1979-2021)	17	269.7	49	436.7	34	3	54
Nuku'alofa (1944-2021)	20	243.0	42	343.3	38	4	45

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

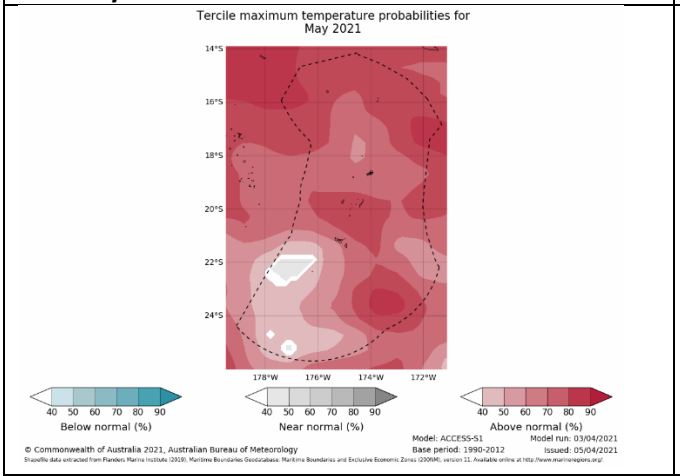
Monthly rainfall



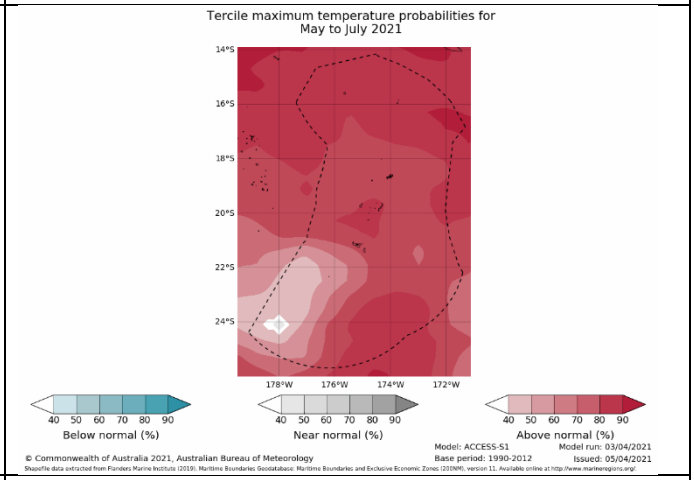
Seasonal rainfall



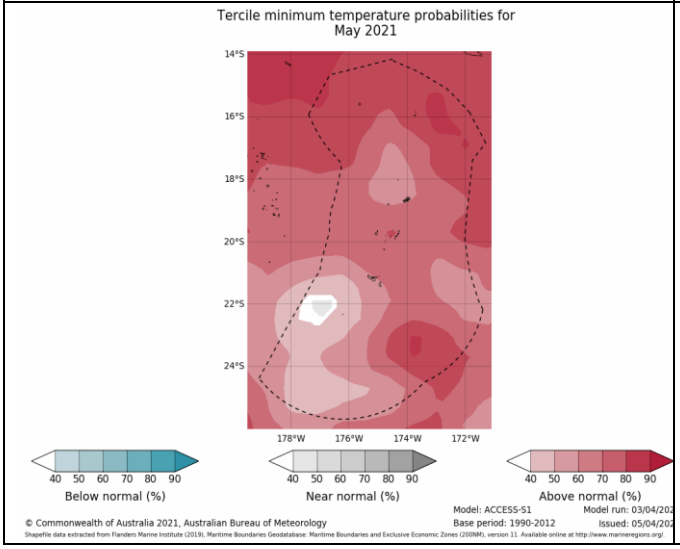
Monthly Tmax



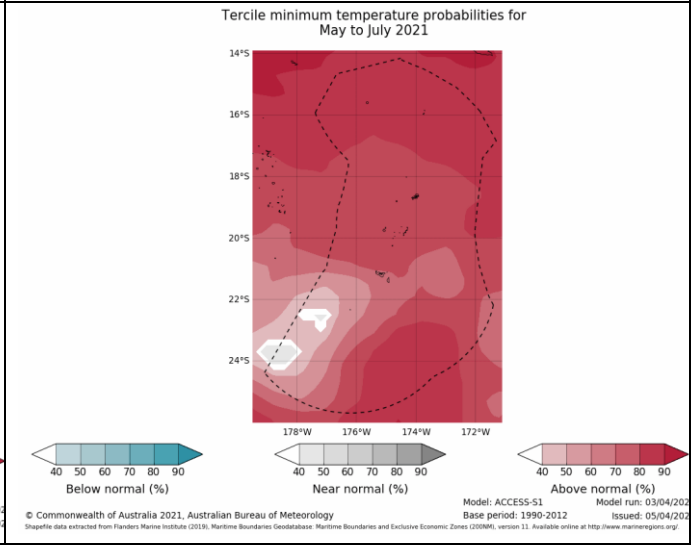
Seasonal Tmax



Monthly Tmin



Seasonal Tmin



Summary Statements

Rainfall for March 2021:

Below normal rainfall was observed in Niuafo'ou and Vava'u, but normal rainfall was reported over the rest of Tonga. Niuafo'ou recorded its third lowest March rainfall in its 50 years of record.

Accumulated rainfall for January to March 2021, including outlook verification:

Above normal rainfall was recorded in the Southern and Central Divisions, while normal rainfall occurred in the Northern Division. Fua'amotu recorded its fifth wettest and Nuku'alofa its ninth wettest January-March period on record.

The verification of the outlook issued in December was consistent at five sites, and near-consistent at Niuatoputapu.

Outlooks for May to July 2021:

1. **SCOPIC:**

   Niuatoputapu, Vava'u: The outlook for the season shows above normal rainfall as the most likely outcome, with normal the next most likely. Below normal is the least likely.

   Ha'apai, Fuaamotu, Nuku'alofa: The outlook for the season shows normal rainfall as the most likely outcome, with above normal the next most likely. Below normal is the least likely.

   Nuafo'ou - The outlook offers little guidance as the chances of above normal, normal and below normal rainfall are similar.

2. **ACCESS-S:**

   Monthly rainfall:

   Above normal rainfall is favoured for May 2021 over Ha'apai, while near-normal rainfall is favoured for Vava'u. The outlook offers little guidance for Niuafo'ou, Niuatoputapu, Fua'amotu and Nuku'alofa.

   Monthly maximum and minimum temperatures:

   Above normal temperatures for May are favoured across most of the country, including all the main islands.

   Seasonal rainfall:

   Above normal rainfall is favoured for May to July 2021 at Ha'apai, Fua'amotu, and Nuku'alofa, and it's also the most likely outcome for Niuatoputapu. Near-normal rainfall is the most likely outcome for Vava'u and Niuafo'ou.

   Seasonal maximum and minimum temperatures:

   Above normal temperatures for May to July are favoured across most of the country, including all the main islands.

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

Product	Date: March 2021	Stakeholder	Total Number of Participants	Number of male	Number of female
Climate Bulletin	27/03/21	General public	100	66	34
EAR Watch					
Monthly Climate Briefing					
Ocean Bulletin	27/03/21	General public	100	66	34
		Total	**100**	**66**	**34**