Pacific Islands - Online Climate Outlook Forum (OCOF) No. 137

Country: Tonga

TABLE 1: Monthly Rainfall

Station (include data period)	Nov-2018	Dec-2018	Jan-2019				
			Total (mm)	33%tile	67%tile	Median	Rank
	Total (mm)	Total (mm)	Rainfall (mm)				
Northern Division							
Niuafo'ou (1971-2019)	101.7	401.3	578.0	204.9	362.2	237.0	41/46
Niuatoputapu (1947-2019)	84.8	325.6	399.1	207.5	296.0	236.0	58/72
Central Division							
Vava'u (1947-2019)	153.7	537.7	799.3	172.3	305.7	239.0	**72/72**
Ha'apai (1947-2019)	146.7	707.1	461.2	123.0	259.7	187.5	68/73
Southern Division							
Fua'amotu (1979-2019)	73.9	276.8	228.4	122.3	283.2	192.0	23/40
Nuku'alofa (1944-2019)	35.6	196.2	202.9	116.0	251.0	187.5	41/75

TABLE 2: Three-month Rainfall for November 2018 to January 2019

Station	Three-month Total		33%tile	67%tile	Median	Rank	SCOPIC forecast probabilities* based on NINO3.4 August-September 2018				Verification: Consistent, Near-consistent, Inconsistent?
	Rainfall (mm)						B-N	N	A-N	LEPS	
Northern Division											
Niuafo'ou (1971-2019)	1081.0	Above normal	700.7	973.3	798.0	31/42	36	33	31	5	Inconsistent
Niuatoputapu (1947-2019)	809.5	Normal	605.1	865.7	752.5	40/67	40	38	22	15	Near-consistent
Central Division											
Vava'u (1947-2019)	1490.7	Above normal	465.8	807.0	638.5	**71/71**	43	39	18	24	Inconsistent
Ha'apai (1947-2019)	1315.0	Above normal	311.9	570.9	459.0	**72/72**	44	35	21	26	Inconsistent
Southern Division											
Fua'amotu (1979-2019)	579.1	Normal	374.7	604.9	467.5	25/39	37	40	23	23	Consistent
Nuku'alofa (1944-2019)	434.7	Normal	315.2	565.0	433.5	38/75	43	38	19	29	Near-consistent

TABLE 3: Seasonal Climate Outlooks using SCOPIC for March to May 2019

Predictor and Period used: NINO3.4 for December 2018 to January 2019

Station	Below Median (prob)	Median Rainfall (mm)	Above Median (prob)		LEPS (%) [whole numbers]	Hit-rate (%) [whole numbers]
Northern Division						
Niuafo'ou (1971-2019)	42	758.0	58		2	61
Niuatoputapu (1947-2019)	49	638.8	51		-2	32
Central Division						
Vava'u (1947-2019)	55	705.4	45		0	56
Ha'apai (1947-2019)	53	559.0	47		-1	48
Southern Division						
Fua'amotu (1979-2019)	58	506.5	42		4	69
Nuku'alofa (1944-2019)	56	496.0	44		1	57

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 (1971-2019)	32	640.2	33	797.7	35	-2	22
Niuatoputapu (1947-2019)	31	589.0	35	741.0	34	-2	27
Central Division							
Vava'u (1947-2019)	37	587.7	36	790.0	27	1	35
Ha'apai (1947-2019)	37	448.0	37	633.0	26	1	42
Southern Division							
Fua'amotu (1979-2019)	45	420.7	20	576.0	35	4	54
Nuku'alofa (1944-2019)	40	442.0	30	552.0	30	1	22

TABLE 4: Seasonal Climate Outlooks using POAMA2 for March to May 2019

Station	Below Normal (prob)	33%ile Rainfall (mm)	Normal (prob)	67%ile Rainfall (mm)	Above Normal (prob)
Niuafo'ou	42	631.0	16	793.0	42
Niuatoputapu	42	587.0	16	744.0	42
Vava'u	42	586.0	19	762.0	39
Ha'apai	42	354.0	19	537.0	39
Nuku'alofa	43	361.0	33	503.0	24

Summary Statements

Rainfall for January 2019:

For Northern and Central Divisions, rainfall was above normal.

For Southern Division, rainfall recorded for the month was normal.

- Vava'u recorded its highest January rainfall since its record started in 1947.

Accumulated rainfall for November 2018 to January 2019, including outlook verification:

For Northern Division: Rainfall was above normal in Niuafo'ou and forecast was inconsistent. Rainfall was normal in Niuatoputapu and the rainfall outlook was near-consistent.

For Central Division: Rainfall was above normal and the rainfall outlook was inconsistent.

For the Southern Division: Rainfall was normal and the rainfall outlook was consistent in Fua'amotu and near-consistent at Nuku'alofa.

- Vava'u and Ha'apai recored their highest 3 month November-January total rainfall since the start of records, which was 1947 at both sites.

Outlooks for March to May 2019:

1. **SCOPIC:**

   For Northern Division, the outlook shows little guidance as the chances of above-normal, normal and below-normal are similar.

   For Central Division, the outlook for the season shows a near-equal likelihood of below-normal and normal rainfall.

   For the Southern Division, the outlook for the season shows below-normal is the most likely outcome with normal the next most likely.

2. **POAMA:**

   For the Northern and Central Divisions, the outlook is mixed as it shows a near-equal likelihood of above-normal and below-normal rainfall; normal is the least likely.

   For Nuku'alofa, the outlook for the season shows below-normal rainfall is the most likely outcome, with normal the next most likely.

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

Country	Date:	Stakeholder	Total Number of Participants	Number of male	Number of female
Tonga	**February 2019**	Distribute Climate outlook via email list to stakeholders.	103	75	28
Remarks.	Rainfall outlook Products are distributed to email list of stakeholders and also during the month to individual requests via email as well.				