Pacific Islands - Online Climate Outlook Forum (OCOF) No. 136

Country: Tonga

TABLE 1: Monthly Rainfall

Station (include data period)	Oct-2018	Nov-2018	Dec-2018				
			Total (mm)	33%tile	67%tile	Median	Rank
	Total (mm)	Total (mm)	Rainfall (mm)				
Northern Division							
Niuafo'ou (1971-2018)	413.6	101.7	401.3	226.8	368.2	287.3	35/47
Niuatoputapu (1947-2018)	211.9	84.8	325.6	181.6	293.7	245.5	51/69
Central Division							
Vava'u (1947-2018)	229.9	153.7	537.7	124.4	266.9	172.0	**68/72**
Ha'apai (1947-2018)	164.4	146.7	707.1	66.0	161.9	124.0	**72/72**
Southern Division							
Fua'amotu (1979-2018)	75.4	73.9	276.8	130.7	192.5	157.0	36/40
Nuku'alofa (1944-2018)	68.7	35.6	196.2	74.2	171.6	126.0	55/75

TABLE 2: Three-month Rainfall for October to December 2018

Station	Three-month Total		33%tile	67%tile	Median	Rank	SCOPIC forecast probabilities* based on NINO3.4 July-August 2018				Verification: Consistent, Near-consistent, Inconsistent?
	Rainfall (mm)						B-N	N	A-N	LEPS	
Northern Division											
Niuafo'ou (1971-2018)	916.6	Above normal	645.0	854.1	711.0	36/45	35	34	31	0	Inconsistent
Niuatoputapu (1947-2018)	622.3	Normal	534.0	746.3	647.5	35/67	38	36	26	6	Near-consistent
Central Division											
Vava'u (1947-2018)	921.3	Above normal	397.7	610.7	544.0	67/72	42	40	18	22	Inconsistent
Ha'apai (1947-2018)	1018.2	Above normal	249.6	425.0	350.0	71/72	42	40	18	20	Inconsistent
Southern Division											
Fua'amotu (1979-2018)	426.1	Normal	287.9	442.1	366.5	25/39	32	38	30	32	Consistent
Nuku'alofa (1944-2018)	300.5	Normal	285.2	418.7	346.7	29/74	44	36	20	30	Near-consistent

TABLE 3: Seasonal Climate Outlooks using SCOPIC for February to April 2019
Predictor and Period used: NINO3.4 for October to November 2018

Station	Below Median (prob)	Median Rainfall (mm)	Above Median (prob)		LEPS (%) [whole numbers]	Hit-rate (%) [whole numbers]
Northern Division						
Niuafo'ou (1971-2018)	60	885.7	40		3	56
Niuatoputapu (1947-2018)	62	765.0	38		3	57
Central Division						
Vava'u (1947-2018)	59	820.6	41		1	59
Ha'apai (1947-2018)	63	652.4	37		6	56
Southern Division						
Fua'amotu (1979-2018)	65	512.0	35		9	67
Nuku'alofa (1944-2018)	55	612.0	45		0	52

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 (1971-2018)	40	724.0	32	937.0	28	-1	30
Niuatoputapu (1947-2018)	47	689.5	21	841.7	32	2	44
Central Division							
Vava'u (1947-2018)	45	706.0	30	898.3	25	3	37
Ha'apai (1947-2018)	46	545.0	38	708.0	16	8	43
Southern Division							
Fua'amotu (1979-2018)	47	465.2	35	690.9	18	10	44
Nuku'alofa (1944-2018)	37	544.0	36	681.0	27	0	24

TABLE 4: Seasonal Climate Outlooks using POAMA2 for February to April 2019

Station	Below Normal (prob)	33%ile Rainfall (mm)	Normal (prob)	67%ile Rainfall (mm)	Above Normal (prob)
Niuafo'ou	**36**	718.0	28	950.0	**36**
Niuatoputapu	**36**	667.0	28	808.0	**36**
Vava'u	39	679.0	15	878.0	**46**
Ha'apai	39	458.0	15	617.0	**46**
Nuku'alofa	**42**	420.0	31	583.0	27

Summary Statements

Rainfall for December 2018:

Above normal for all stations.

Highest rainfall was recorded in Ha'apai which recorded its wettest December on record. Damage to infrastructure in places in Ha'apai was reported due flooding from heavy rain.

Accumulated rainfall for October to December 2018, including outlook verification:

Above normal rainfall in Niuafo'ou and the Central Division, and the forecasts were inconsistent.

Normal rainfall in Niuatoputapu and the Southern Division. The outlooks were consistent in Fua'amotu and near consistent for Niuatoputapu and Nuku'alofa.

Outlooks for February to April 2019:

1. **SCOPIC:**

   For the Northern and Central Divisions, and Fua'amotu: The outlook for the season shows below normal is the most likely outcome with normal as the next most likely.

   For Nuku'alofa: The outlook for the season shows a near equal likelihood of below-normal and normal rainfall.

2. **POAMA:**

   For the Central Division: Above normal rainfall is the most likely outcome for the season, with below normal the next most likely.

   For the Northern Division: the outlooks is mixed with near-equal chances of below normal and above normal rainfall.

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

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

Country	Date: December 2018	Stakeholder	Total Number of Participants	Number of male	Number of female
Tonga	First 10 days of the week or second week,we get good feedback from stakeholders.	Distribute Climate outlook via email list to stakeholders. Also update Monthly Climate summary and Ocean Outlook on website. These are updated on a monthly basis. Stakeholders are: Agriculture & Farmers, NGOs, Govt mins, Helath, Water, Disaster. .Media- radio, TV, social media.	103	75	28

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

Very Low: X < 0.0   Low: 0 ≤ X < 5   Moderate 5 ≤ X < 10   Good: 10 ≤ X < 15   High: 15≤ X < 25

Very High: 25 ≤X < 35 Exceptional: X ≥ 35