

Pacific Islands - Online Climate Outlook Forum (OCOF) No.89

Country Name: Tonga

TABLE 1: Monthly Rainfall

Station (include data period)			January 2015				
	Nov 2014 Total	Dec 2014 Total	Total	33%tile Rainfall (mm)	67%tile Rainfall (mm)	Median Rainfall (mm)	Ranking
Northern Division							
Niuafu'ou (1971-2014)	261	204.4	46.5	224.0	377.0	265.0	2/41
Niutoputapu (1947-2014)	264	65.4	210.4	212.0	296.0	243.0	23/68
Central Division							
Vava'u (1947-2014)	13.3	122.4	281.9	173.0	312.0	239.0	43/68
Ha'apai (1947-2014)	11.1	32.2	191.9	123.0	260.3	192.0	35/69
Southern Division							
Nukuálofa (1944-2014)	13.6	20.5	95.8	127.0	252.0	192.5	17/71
Fuaámotu (1980-2014)	28.7	24.0	75.7	132.3	293.4	194.0	8/36

Period: *below normal/normal/above normal

**TABLE 2: Three-monthly Rainfall
November to January 2015
Predictors and Period used: NINO 3.4 (July to Sep 2014)**

Station	Three-month Total	33%tile Rainfall (mm)	67%tile Rainfall (mm)	Median Rainfall (mm)	Ranking	Forecast probs.* (include LEPS)	Verification ¹ (Consistent, Near-consistent or Inconsistent)
<i>Northern Division</i>							
Niuafu'ou (1971-2014)	511.9	710.0	1005.9	825.6	6/37	34,33,33 (-0.4)	consistent
Niuatoputapu (1947-2014)	539.8	622.0	867.3	755	19/63	37,37,26 (14.4)	Near consistent
<i>Central Division</i>							
Vava'u (1947-2014)	417.6	492.3	817.7	655.0	18/67	37,39,24 (21.3)	Near consistent
Ha'apai (1947-2014)	235.2	323.7	571.2	459.0	15/68	36,38,26 (23.8)	Near consistent
<i>Southern Division</i>							
Nukuálofa(1944-2014)	129.9	342.0	568.0	439.5	1/71	35,40,25 (28.6)	Near consistent
Fuaámotu(1980-2014)	128.4	392.0	615.6	467.5	2/35	33,38,29 (14.2)	Near consistent

¹Forecast is consistent when observed and predicted (tercile with the highest probability) categories coincide (are in the same tercile).

Forecast is near-consistent when observed and predicted (tercile with the highest probability) differ by only one category (i.e. terciles 1 and 2 or terciles 2 and 3).

Forecast is inconsistent when observed and predicted (tercile with the highest probability) differ by two categories (i.e. terciles 1 and 3).

**TABLE 3: Seasonal Climate Outlooks using SCOPIC for
March to May 2015**

Predictors and Period used: NINO 3.4 (November 2014 to January 2015)

Station	Below Normal (prob)	33%ile rainfall (mm)	Normal (prob)	66%ile rainfall (mm)	Above Normal (prob)	LEPS (%)	Hit-rate (%)
<i>Northern Division</i>							
Niuafou'ou (1971-2014)	31	644.5	28	808	41	-0.05	46.3
Niuatoputapu (1947-2014)	29	583.3	36	743.7	36	-0.5	23.2
<i>Central Division</i>							
Vava'u (1947-2014)	38	585.5	33	800	29	0.5	32.8
Ha'apai (1947-2014)	36	443	39	608.8	25	0.8	34.9
<i>Southern Division</i>							
Nuku'alofa(1944-2014)	41	442	28	552	31	0.8	45.3
Fua'amotu(1980-2014)	45	426	23	580	32	4.8	50

Seasonal Climate Outlook:

Mar to May 2015- Median Table:

Predictors and Period used: NINO 3.4(Nov to Jan 2015)

Station	Below Median (prob)	Median rainfall (mm)	Above Median (prob)	LEPS	Hit-rate
<i>Northern Division</i>					
Niuafou'ou (1971-2014)	44	768	56	0.4	61
Niuatoputapu (1947-2014)	48	637.5	52	-1.7	23.2
<i>Central Division</i>					
Vava'u (1947-2014)	53	705.4	47	-1	54.7
Ha'apai (1947-2014)	55	556	45	-0.4	46
<i>Southern Division</i>					
Nuku'alofa (1944-2014)	56	488.5	44	1.2	57.8

Fua'amotu Airport (1980-2014)	61	507.4	39	6.1	67.6

TABLE 4: Seasonal Climate Outlooks using POAMA2 for March to May 2015

Station	Lower Tercile (prob)	33%ile rainfall (mm)	Middle Tercile (prob)	66%ile rainfall (mm)	Upper Tercile (prob)
Nuku'alofa	38.48	420	30.3	583	21.2

Summary Statements

Rainfall for January 2015:

Rainfall during January was below normal throughout the country except Central division which was normal.

Accumulated rainfall for November - January 2015, including outlook verification:

Rainfall for the last three months was below normal throughout the country. Southern division November to January rainfall was exceptionally low with Nuku'alofa recording its lowest rainfall in 71 years and Fua'amotu its second lowest in 35 years.

The SCOPIC forecasts for the last three months was near consistent and consistent for Niuafu'ou in the Northern division.

Outlooks for March – May 2015:

1. SCOPIC:

The seasonal rainfall outlook for March to May 2015 shows:

- *Above normal* is the most likely outcome for the Northern Division, the next most likely outcome is below normal in Niuafu'ou and normal in Niua-toputapu.
- *In Central division; the most likely outcome for Vava'u is below normal and the next most likely is normal. For Ha'apai, the most likely outcome is normal and the next most likely is below normal.*
- *Below normal* is the most likely outcome for the Southern Division and above normal rainfall is the next most likely outcome.

The confidences of the forecasts were generally low.

2. POAMA:

- POAMA models shows the most likely outcome for Nuku'alofa for March to May 2015 is for rainfall to be ***below normal***.

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: $X \geq 35$