

# Pacific Islands - Online Climate Outlook Forum (OCOF) No. 149

Country: Tonga

**TABLE 1: Monthly Rainfall**

| Station (include data period) | Nov-2019   | Dec-2019   | Jan-2020      |         |         |        |       |
|-------------------------------|------------|------------|---------------|---------|---------|--------|-------|
|                               |            |            | Total (mm)    | 33%tile | 67%tile | Median | Rank  |
|                               | Total (mm) | Total (mm) | Rainfall (mm) |         |         |        |       |
| Northern Division             |            |            |               |         |         |        |       |
| Niuafo'ou (1971-2020)         | 119.0      | 173.0      | 280.0         | 209.0   | 362.6   | 241.0  | 27/47 |
| Niuaatoputapu (1947-2020)     | 109.2      | 265.7      | 253.7         | 208.9   | 296.3   | 239.5  | 40/73 |
| Central Division              |            |            |               |         |         |        |       |
| Vava'u (1947-2020)            | 79.1       | 158.2      | 220.2         | 173.0   | 316.0   | 244.0  | 33/74 |
| Ha'apai (1947-2020)           | 56.9       | 158.6      | 222.5         | 123.0   | 261.0   | 191.9  | 41/74 |
| Southern Division             |            |            |               |         |         |        |       |
| Fua'amotu (1979-2020)         | 72.2       | 245.7      | 305.3         | 132.0   | 273.0   | 193.0  | 29/41 |
| Nuku'alofa (1944-2020)        | 68.5       | 228.5      | 257.0         | 117.0   | 250.0   | 188.0  | 54/76 |

**TABLE 2: Three-month Rainfall for November 2019 to January 2020**

| Station                   | Three-month Total |              | 33%tile | 67%tile | Median | Rank  | SCOPIC forecast probabilities<br>based on NINO3.4 August-September 2019 |    |     |      | Verification:<br>Consistent, Near-<br>consistent,<br>Inconsistent? |
|---------------------------|-------------------|--------------|---------|---------|--------|-------|-------------------------------------------------------------------------|----|-----|------|--------------------------------------------------------------------|
|                           | Rainfall (mm)     |              |         |         |        |       | B-N                                                                     | N  | A-N | LEPS |                                                                    |
| Northern Division         |                   |              |         |         |        |       |                                                                         |    |     |      |                                                                    |
| Niuafu'ou (1971-2020)     | 572.0             | Below normal | 702.3   | 998.7   | 803.6  | 9/43  | 32                                                                      | 35 | 33  | 4    | Near-consistent                                                    |
| Niuaotoputapu (1947-2020) | 628.6             | Normal       | 613.0   | 864.0   | 754.0  | 24/68 | 36                                                                      | 38 | 26  | 14   | Consistent                                                         |
| Central Division          |                   |              |         |         |        |       |                                                                         |    |     |      |                                                                    |
| Vava'u (1947-2020)        | 457.5             | Below normal | 482.6   | 817.7   | 655.0  | 22/73 | 36                                                                      | 38 | 26  | 20   | Near-consistent                                                    |
| Ha'apai (1947-2020)       | 438.0             | Normal       | 317.8   | 580.5   | 469.0  | 34/73 | 35                                                                      | 38 | 27  | 25   | Consistent                                                         |
| Southern Division         |                   |              |         |         |        |       |                                                                         |    |     |      |                                                                    |
| Fua'amotu (1979-2020)     | 623.2             | Above normal | 383.3   | 593.9   | 479.0  | 28/40 | 31                                                                      | 40 | 29  | 19   | Near-consistent                                                    |
| Nuku'alofa (1944-2020)    | 554.0             | Normal       | 316.1   | 562.0   | 435.7  | 49/76 | 35                                                                      | 40 | 25  | 27   | Consistent                                                         |

**TABLE 3: Seasonal Climate Outlooks using SCOPIC for March to May 2020**

Predictor and Period used: NINO3.4 for December 2019 to January 2020

| Station                   | Below<br>Median<br>(prob) | Median<br>Rainfall<br>(mm) | Above<br>Median<br>(prob) |  | LEPS (%)<br>[whole<br>numbers] | Hit-rate<br>(%)<br>[whole<br>numbers] |
|---------------------------|---------------------------|----------------------------|---------------------------|--|--------------------------------|---------------------------------------|
| <i>Northern Division</i>  |                           |                            |                           |  |                                |                                       |
| Niuafo'ou (1971-2020)     | 46                        | 767.0                      | 54                        |  | -2                             | 64                                    |
| Niuaatoputapu (1947-2020) | 51                        | 640.5                      | 49                        |  | -2                             | 21                                    |
| <i>Central Division</i>   |                           |                            |                           |  |                                |                                       |
| Vava'u (1947-2020)        | 52                        | 706.8                      | 48                        |  | 0                              | 55                                    |
| Ha'apai (1947-2020)       | 53                        | 557.5                      | 47                        |  | -1                             | 50                                    |
| <i>Southern Division</i>  |                           |                            |                           |  |                                |                                       |
| Fua'amotu (1979-2020)     | 55                        | 507.2                      | 45                        |  | 2                              | 63                                    |
| Nuku'alofa (1944-2020)    | 54                        | 497.0                      | 46                        |  | 0                              | 54                                    |

| Station                   | Below<br>Normal<br>(prob) | 33%ile<br>Rainfall<br>(mm) | Normal<br>(prob) | 67%ile<br>Rainfall<br>(mm) | Above<br>Normal<br>(prob) | LEPS (%)<br>[whole<br>numbers] | Hit-rate<br>(%)<br>[whole<br>numbers] |
|---------------------------|---------------------------|----------------------------|------------------|----------------------------|---------------------------|--------------------------------|---------------------------------------|
| <i>Northern Division</i>  |                           |                            |                  |                            |                           |                                |                                       |
| Niuafo'ou (1971-2020)     | 32                        | 644.5                      | 33               | 804.6                      | 35                        | -2                             | 34                                    |
| Niuaatoputapu (1947-2020) | 30                        | 591.0                      | 37               | 733.3                      | 33                        | -2                             | 34                                    |
| <i>Central Division</i>   |                           |                            |                  |                            |                           |                                |                                       |
| Vava'u (1947-2020)        | 36                        | 590.0                      | 35               | 780.0                      | 29                        | 0                              | 33                                    |
| Ha'apai (1947-2020)       | 35                        | 442.7                      | 37               | 627.0                      | 28                        | 1                              | 40                                    |
| <i>Southern Division</i>  |                           |                            |                  |                            |                           |                                |                                       |
| Fua'amotu (1979-2020)     | 41                        | 422.0                      | 23               | 580.0                      | 36                        | 2                              | 48                                    |
| Nuku'alofa (1944-2020)    | 39                        | 442.7                      | 30               | 558.0                      | 31                        | 1                              | 38                                    |

**TABLE 4: Seasonal Climate Outlooks using POAMA2 for March to May 2020**

| Station       | Below<br>Normal<br>(prob) | 33%ile<br>Rainfall<br>(mm) | Normal<br>(prob) | 67%ile<br>Rainfall<br>(mm) | Above<br>Normal<br>(prob) |
|---------------|---------------------------|----------------------------|------------------|----------------------------|---------------------------|
| Niuafo'ou     | 54                        | 631.0                      | 10               | 793.0                      | 36                        |
| Niuaatoputapu | 54                        | 587.0                      | 10               | 744.0                      | 36                        |
| Vava'u        | 45                        | 586.0                      | 28               | 762.0                      | 27                        |
| Ha'apai       | 45                        | 354.0                      | 28               | 537.0                      | 27                        |
| Nuku'alofa    | 51                        | 361.0                      | 28               | 503.0                      | 21                        |

## **Summary Statements**

### **Rainfall for January 2020:**

“Above Normal” rainfall was recorded over Fua’amotu and Nuku’alofa, while “Normal” rainfall totals occurred in the Northern and Central Divisions.

### **Accumulated rainfall for November 2019 to January 2020, including outlook verification:**

“Above normal” rainfall was recorded at Fua’amotu, while “Normal” to “Below normal” three months totals were observed elsewhere.

### **Outlooks for March to May 2020:**

#### **1. SCOPIC:**

**Northern and Central Divisions:** The outlook offers little guidance as the chances of above normal, normal and below normal are similar.

**Southern Division:** The outlook for season shows “Below-normal” as the most likely outcome, with “Above Normal” the next most likely. “Normal” is the least likely.

#### **2. POAMA:**

The outlook for season shows “Below Normal” as the most likely outcome for all of Tonga.

**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:<br/>January<br/>2020</b> | <b>Stakeholder</b> | <b>Total Number<br/>of Participants</b> | <b>Number of<br/>male</b> | <b>Number of<br/>female</b> |
|--------------------------------|-----------------------------------|--------------------|-----------------------------------------|---------------------------|-----------------------------|
| Climate<br>Bulletin            | 12/02/2020                        | General<br>public  | 100                                     | 66                        | 34                          |
| EAR Watch                      |                                   |                    |                                         |                           |                             |
| Monthly<br>Climate<br>Briefing |                                   |                    |                                         |                           |                             |
| Ocean Bulletin                 | 12/02/2020                        | General<br>public  | 100                                     | 66                        | 34                          |
| <b>Total</b>                   |                                   |                    |                                         |                           |                             |